UNITED STATES DEPARTMENT OF THE INTERIOR
BLM, BOISE DISTRICT

EA # DOI-BLM-ID-B030-2009-0004-EA
Title Page

Applicant (if any): **Tommy and Barbara Moore**	Proposed Action: **To respond to a grazing permit renewal application and improve resource conditions**		EA No. **DOI-BLM-ID-B030-2009-0004-EA** **Also known as EA # ID-130-2009-EA-3783**	
State: **Idaho**	County: **Owyhee**	District: **Boise**	Field Office: **Owyhee**	Authority: **NEPA, FLPMA**
Prepared By: **OFO ID Team**	Title: **Pole Creek Allotment Permit Renewal**			Report Date: **2/28/2012**

LANDS INVOLVED

Meridian	Township	Range	Sections	Acres
Boise	**10S**	**6W**	**14, 15, 22-27, 34-36**	**23,395**
	10S	**5W**	**19, 30-32**	
	11S	**6W**	**1-3, 10-15, 22-27, 34-36**	
	11S	**5W**	**4-10, 15-21, 28-33**	
	12S	**6W**	**2, 3**	
	12S	**5W**	**1**	

Consideration of Critical Elements	N/A or Not Present	Applicable or Present, No Impact	Discussed in EA
Air Quality			X
Areas of Critical Environmental Concern	X		
Cultural Resources			X
Environmental Justice (E.O. 12898)		X	
Farm Lands (prime or unique)	X		
Floodplains	X		
Migratory Birds			X
Native American Religious Concerns			X
Invasive, Nonnative Species			X
Wastes, Hazardous or Solid	X		
Threatened or Endangered Species			X
Socio-economic			X
Water Quality (Drinking/Ground)			X
Wetlands/Riparian Zones			X
Wild and Scenic Rivers (Eligible)	X		
Wilderness Study Areas	X		

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Pole Creek Allotment Grazing Permit Renewal

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List of Acronyms Used in the Document

ACEC	Areas of Critical Environmental Concern
AIC	Annual Indicator Criteria
AUM	Animal unit Month
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CIHD	Committee for Idaho's High Desert
EA	Environmental Assessment
FEIS	Final Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FAR	Functional at Risk
FFR	Fenced Federal Range
FLPMA	Federal Land Policy and Management Act (of 1976)
FRCC	Fire Regime Condition Class
IBH	Idaho Bird Hunter's
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IM	Instructional Memorandum
ISAC	Idaho Sage-grouse Advisory Committee
JMWHP	Juniper Mountain Wildlife Habitat Management Plan

LWC	Lands with Wilderness Characteristics
LWG	Local Working Group
MDWG	Mule Deer Working Group
MIM	Multiple Indicator Monitoring
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act (of 1990)
NEPA	National Environmental Policy Act
NF	Nonfunctional Condition
NHPA	National Historic Preservation Act (of 1966)
ODEQ	Oregon Department of Environmental Quality
OFO	Owyhee Field Office
OHV	Off-Highway Vehicle
OMA	Omnibus Public Land Management Act (of March 30, 2009)
ORMP	Owyhee Resource Management Plan
PFC	Proper Functioning Condition
PNNL	Pacific Northwest National Laboratory
PORMP	Proposed Owyhee Resource Management Plan
TMDL	Total Maximum Daily Load
TR	Technical Report
USDI	U.S. Department of the Interior
VRM	Visual Resource Management
WWP	Western Watersheds Project

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Pole Creek Allotment Grazing Permit Renewal

1.0 Introduction

The Bureau of Land Management (BLM), Owyhee Field Office (OFO) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA), and other relevant Federal and State laws and regulations. The EA analyzes the effects of different alternatives for livestock management and juniper treatments on the Pole Creek Allotment. It also serves as a tool to help the Authorized Officer make an informed decision that is in conformance with Owyhee Resource Management Plan (ORMP) (USDI-BLM 1999b) objectives and in compliance with the Idaho Standards for Rangeland Health (Standards) and Guidelines for Livestock Grazing Management (USDI-BLM 1997). It discloses the direct, indirect, and cumulative environmental effects that would result from the various alternatives and potential decisions. For reader clarification, due to a change in the electronic filing system during the development of this document, a new EA number was given. The old EA number to this document is ID-130-2009-EA-3783.

1.1 Location, Setting, and Background

The Pole Creek Allotment is located in southwestern Owyhee County, Idaho, approximately 30 miles south of Jordan Valley, Oregon (Map 1). The allotment lies in the Owyhee Mountains on the west slope of Juniper Mountain. Elevations range from 4,500 feet near the Dutcher Pasture to over 6,200 feet at Scott Spring on Juniper Mountain. Annual precipitation ranges from approximately 12 to 20 inches. Squaw Creek forms its northern boundary, the southern boundary lies near the Middle Fork Owyhee River, the western boundary is the Oregon/Idaho border, and the top of Juniper Mountain forms a portion of the eastern boundary (Map 2).

Table LOC1. Pasture Acreage.

Allotment	Pastures	Ownership			Total Acres
		Federal	State	Private	
Pole Creek	Berry Gulch (3)	1,550	0	0	**1,550**
	Horse Flat/	5,458	0	0	**5,458**
	Scott Spring (1B)	3,752	0	0	**3,752**
	Pole Creek Breaks (1A)	11,641	643	41	**12,325**
	Dutcher (2)	994	0	407	**1,401**
Totals		**23,395**	**643**	**448**	**24,486**

Actual use data were calculated for those years the permittee submitted an Actual Grazing Use Report (Form 4130-5) and are outlined in Appendix A. A brief average actual use summary is outlined below.

Table LOC2. Actual Use Summary.

Years	Average Actual Use	Time Frame
1988-2000	1,281 AUMs	Average actual use prior to the 2001 Assessment and Determination.
1988-2007	1,265 AUMs	Average actual use from 1988 through the 2008 Stipulated

		Settlement Agreement. See Section 1.6.2.
1988-2011	1,177 AUMs	Long-term average actual use.
2001-2007	1,229 AUMs	Average actual use from the 2001 Determination through the 2008 Stipulated Settlement Agreement.
2008-2011	892 AUMs	Average actual use since the 2008 Stipulated Settlement Agreement. See Section 1.6.2.

1.2 Need for and Purpose of Action

The purpose of this action is to respond to an application for renewal of an expiring grazing permit and improve resource conditions through changes to livestock grazing management and implementation of vegetation treatments. The need for this action is established by the Federal Land Policy and Management Act (FLPMA), Taylor Grazing Act, Fundamentals of Range Health (43 CFR 4180), and the ORMP. Livestock use in riparian areas, unauthorized livestock drift between Oregon/Idaho, upland vegetation and watershed conditions, and management of sage-grouse habitat have been identified as issues on the Pole Creek Allotment. In addition, due to juniper expansion into upland sagebrush communities, this document will consider vegetative treatments. The BLM determined that land health standards cannot be met unless vegetative treatments are implemented.

The BLM authorized officer will decide:

- whether or not to renew the applicant's ten year grazing permit with suitable terms and conditions, and whether and to what extent to construct range improvement projects, and
- whether and to what extent BLM would implement vegetation treatments.

The analysis and authorization are needed here and now because:

- The ORMP (USDI-BLM 1999b) identifies the Pole Creek Allotment as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Idaho's Standards and Guidelines for Grazing Management (1997), it is BLM policy to issue permits for livestock grazing to qualified applicants (43 CFR 4130.2(a).

- Currently, no applicable Standards are being met and livestock grazing management practices and juniper encroachment are significant causal factors. See Appendix B, Assessment and Evaluation/Determination for Achieving Standards for Rangeland Health and Conforming with Guidelines for Livestock Grazing Management. See Affected Environments in this document for updated conditions since the 2001 Assessment.
    - The occurrence of water flow patterns and pedastalled bunchgrass in the interspatial areas indicate that Standard 1 (Watersheds) is not being met.

    - Standard 2 (Riparian Areas and Wetlands), Standard 3 (Stream Channel/Floodplain), Standard 7 (Water Quality), and Standard 8 (Threatened and Endangered Plants and Animals) are not being met on 19.89 miles of stream but are being met on 11.01 miles of stream. Generally, those reaches meeting the Standard are inaccessible to livestock. Those reaches not meeting the Standards

are generally grazed every year from July through August/September and are dominated by shallow-rooted early seral species.

- Standard 4 (Native Plant Communities) is not being met in the higher elevations where mountain big sagebrush has largely been replaced by juniper, and large perennial bunchgrasses have been reduced, indicating degraded species diversity and plant community integrity. Bare ground or a gravel surface is very common and interspatial litter is less than expected. On lower elevation low sagebrush sites, sagebrush has been replaced by juniper only in localized areas, and large perennial bunchgrass density is closer to reference conditions, but is influenced by pockets of invasive non-native grasses.

- Western juniper expansion is a causal factor for the allotment not meeting Standards. Juniper is expanding into the shrub steppe, aspen, and riparian communities, transforming many of them into dense juniper woodlands. This reduces habitat for sage-grouse and other shrub steppe, aspen, and riparian-dependent wildlife and plant species. Accordingly, the need to "manage vegetation to achieve healthy rangelands", and "use fire as a management tool to improve rangeland health" is identified in the 1999 ORMP Decision and the need for juniper management is identified in the Management Actions for the respective ORMP Resource Objectives.

- Livestock grazing currently occurs during the summer (7/1 – 9/30), and a significant amount of riparian monitoring has been conducted since 2008 in the Pole Creek Allotment to assess livestock impacts. This monitoring showed that stubble height (≥ 4 in.) and streambank trampling (≤ 10%) criteria have been exceeded very quickly in riparian areas that are readily accessible to livestock. Due to the accessibility to water, cooler temperatures, abundant shade, and more nutritious forage in riparian areas during the summer compared to the uplands, livestock congregate in these areas. With this particular terrain and location of water during the summer on this allotment, even low numbers of cattle tend to congregate on riparian areas and walk streambanks. For this reason, BLM determined time of livestock use is the primary limiting factor for riparian health. Combined heavy summer use in riparian areas and a removal date of 9/30 does not allow much time for regrowth of riparian vegetation to dissipate flows during the next season's runoff, nor does the late off-date allow streambanks to repair any trampling prior to the following runoff. BLM believes hot season grazing in the Pole Creek Allotment is impractical; livestock have been documented to exceed stubble height and streambank trampling criteria too quickly. Therefore, a different season of use would be analyzed to reduce use in riparian areas.

1.3 Scoping and Development of Issues

On March 11, April 1, and April 22, 2009, meetings were held with the permittee to discuss allotment conditions, objectives, and livestock management on the Pole Creek Allotment. On July 30, 2009, the Owyhee Field Manager issued the Scoping Document for this EA #ID-130-2009-EA-3783, "Pole Creek Allotment Grazing Permit Renewal" for 30-day comment and review to all affected grazing permittees, interested publics, and other State and local

governments of record for the Pole Creek Allotment. The scoping document was presented to the Shoshone-Paiute Tribes and Owyhee County Commissioners on July 16, 2009. On November 10, 2009, a field tour was held with the permittee, Western Watersheds Project (WWP), and the BLM. Several sites were visited and issues were discussed. Additional meetings were held on November 10 and December 15, 2010 with the permittee to discuss grazing alternatives and juniper management.

Comments were received from WWP and the Idaho Department of Fish and Game (IDFG) (Appendix C).

WWP provided most of the comments. In summary, they expressed concern about the current conditions of the allotment and the effects of recent livestock grazing on the riparian areas, the natural vegetation, wildlife habitat, and the establishment of noxious and invasive weeds. They stated that the scoping document contained only a limited range of alternatives with no reductions in livestock use to improve the current conditions. Accordingly, they recommended developing alternatives that would change the grazing season away from hot season use and at reduced livestock use levels. As will be seen, BLM has incorporated these suggestions. WWP disagreed with the need for the proposed range improvement projects and proposed juniper treatments. They emphasized juniper's value as wildlife habitat and disputed the need for the juniper management, especially broadcast burning. They also expressed concerns about the effects of carbon emissions on global climate change. WWP suggested hand cutting with no slash burning as the only appropriate method of juniper management. WWP also proposed designating the entire Juniper Mountain "area" as an Area of Critical Environmental Concern (ACEC) to protect old growth juniper in the area. These last two suggestions were included as Alternatives Considered but not Analyzed in Detail in Section 2.3.

IDFG asked which juniper stands would be treated and how, why over 1,100 AUMs are suspended, requested regular rangeland condition monitoring, and requested IDFG guidelines be used when constructing new fences near sage-grouse leks and other important habitat areas. These comments have been incorporated into the document and in Appendix C.

Through the scoping and interdisciplinary team process, the BLM identified several issues concerning livestock management in the Pole Creek Allotment. The foremost issues are identified (but not limited to) below:

1. Juniper encroachment
2. Riparian vegetation conditions
3. Fish habitat conditions
4. Upland vegetation and watershed conditions
5. Sage-grouse habitat conditions
6. Noxious and invasive weeds

1.4 Summary of Proposed Action

The BLM proposes to change the grazing season of use from July 1 through September 30 to April 16 through June 30. Additionally, BLM proposes to reduce cattle numbers from 500 to 401 cattle (plus an additional 38 cattle every other year). Total Active Use would be reduced

from 1,468 to 1,029 AUMs. This equates to a 30% reduction from current Active use, and is 15% higher than the average actual use from 2008-2011. Actual use tends to vary year to year (without exceeding total active AUMs) based on weather conditions (i.e. drought), management changes, turnout conditions (i.e. range readiness) etc. The two large pastures in the allotment would be completely rested from grazing in alternating years. Two spring exclosures would be expanded and two new exclosures would be constructed. Gap fences would also be constructed to protect narrow riparian areas, create an additional pasture, and to keep cattle from drifting on to and off of Oregon state lands.

The BLM also proposed to use cutting and prescribed fire treatments over the next ten years (through 2022) to restore sagebrush steppe, aspen, and mountain shrub habitat that is/has transitioned to juniper woodlands. The livestock grazing alternatives and range projects were developed to make immediate improvements in resource conditions. However, changes in grazing management alone (even no grazing) would not allow the allotment to meet Standards and identified objectives in the long term. Shrub steppe and aspen communities of the allotment would continue to be replaced by expanding juniper, even in the absence of grazing. The juniper treatments are therefore needed to meet the long-term health of the allotment by restoring and maintaining the shrub steppe and aspen communities of the allotment which provide important cover for watershed health, diverse wildlife habitats, and scenic values. The treatment would also restore the natural fire regime for long-term maintenance of these important communities.

Because one pasture (approximately half of the allotment) would be rested every year, residual forage plus the new year's growth would be available in the year the pasture is grazed, resulting in more net available forage during use years. Additionally, changing the season of use from summer to spring would improve distribution significantly, resulting in more dispersed livestock use throughout the upland areas. As shown in Appendix A, utilization has averaged 15% in Pasture 1A and 18% in Pasture 1B since 2008. Therefore, current available forage is expected to support the proposed use level of 1,029 Active AUMs and meet applicable Guidelines independent of the implementation of proposed juniper treatments.

Sage-grouse habitat within the allotment has been reduced due to conifer encroachment. Based on an interim updated (2011) version of the Idaho Sage-grouse Habitat Planning Map, 24% (5,559 acres) of the allotment is estimated to have been sage-grouse habitat. Currently however, only 2% (516 acres) of the allotment could be considered suitable sage-grouse habitat. Therefore, juniper treatments on approximately 5,000 acres could further restore lost sage-grouse habitat (see Section 3.5).

Changing livestock management from season-long grazing to a rest/rotation grazing system would benefit riparian areas. The rest/rotation grazing system has shown to be one of the most practical means of restoring and maintaining riparian zones, and with moderate stocking rates, improves streamside vegetation and stream characteristics (Holechek et al. 1998). Spring season of use was chosen specifically to decrease concentrated livestock use in riparian areas. Spring use typically results in better livestock distribution between riparian and upland areas due to flooding and generally cooler air temperatures in riparian areas, and highly palatable

upland forage (USDI-BLM 2006). The proposed action has a higher stocking rate (on Pole Creek Breaks or Horse Flat/Scott Spring Pastures) than other alternatives and it is acknowledged that spring grazing can be detrimental to upland vegetation if used every year (Brewer et al. 2007). However, when considering that these pastures are only used every other year, the effects from livestock distribution improvement and moderate utilization are expected to compensate for the higher stocking rate and upland spring grazing effects.

1.5 Conformance with Applicable Land Use Plan

The ORMP guides public land management, including the grazing management program, in the area where the Pole Creek Allotment is located. The alternatives were developed to conform with the ORMP, as required by 43 CFR 1610.5-3(a). Relevant goals and management actions from the ORMP are summarized below:

- Provide for a sustained level of livestock use compatible with meeting other resource objectives. (LVST1: ORMP p. 23)
- Improve unsatisfactory or maintain satisfactory watershed and vegetative health conditions. (SOIL1: ORMP p. 9; VEGE1: ORMP p. 12)
- Meet or exceed water quality standards. (WATR1: ORMP p. 11)
- Maintain or improve riparian and wetland areas to attain proper functioning conditions, and perennial streams to support native fish. (RIPN1: ORMP p. 13; FISH1: ORMP p. 18)
- Maintain or enhance plant community structure and condition to support wildlife. (WDLF1: ORMP p. 15)
- Manage special status species and habitats so their existence is not threatened and there is no need for listing under the Endangered Species Act. (SPSS1: ORMP p. 20)
- Restore the natural disturbance regime to improve rangeland health and native plant communities. (FIRE3: ORMP p. 27)
- Meet or exceed air quality standards with all authorized actions. (AIRQ1: ORMP p. 9; FIRE4: ORMP p. 27)
- Manage for specified visual resource management classifications. (VISL1: ORMP p. 44)
- Protect known cultural resource values from loss until their significance is determined; protect/conserve significant cultural resource sites and values. (CULT1 and CULT2: ORMP p. 44-45)
- Implement a juniper abatement plan for appropriate sites on which juniper is invading. (SOIL1, WATR1, RIPN1, FISH1: ORMP p. 9, 11, 13, 18, respectively)
- Implement prescribed burning practices in areas where it is determined that burning would improve rangeland health and increase native plant biodiversity in western juniper and big sagebrush vegetation types. (VEGE 1: ORMP p. 12)
- Use juniper harvesting to achieve a desired plant community. (FORS2: ORMP p. 14)
- Design and implement vegetation treatments to improve habitat where juniper or shrub density is contributing to unsatisfactory habitat conditions. (WDLF1: ORMP p. 15)
- Prescribed burning practices will be used in areas where it is determined that burning would improve rangeland health and increase biodiversity in big sagebrush and western juniper vegetation communities. (LVST1: ORMP p. 23)
- Use natural and prescribed fire in big sagebrush and western juniper dominated vegetation communities to burn approximately 105,000 acres. (FIRE3: ORMP p. 27)

1.6 Relationship to Statutes, Regulations, and Other Requirements

This document is prepared pursuant to several acts, court orders, collaborative plans, and BLM guidance.

1.6.1 Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management

On August 12, 1997, the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management were approved by the Secretary of the Interior. Subsequently, livestock management practices must be in conformance with the approved standards and guidelines (USDI-BLM 1997).

1.6.2 Litigation History

On March 31, 1999, the Honorable B. Lynn Winmill, Chief Judge, U.S. District Court, signed a Memorandum Decision and Order (Civil Case No. 97-0519-S-BLW) finding that the BLM violated NEPA when 68 grazing permits (including Pole Creek Allotment) were renewed in 1997. The decision did not impose a remedy to rectify the NEPA violation. However, on February 29, 2000, Judge Winmill signed a Memorandum Decision and Order (Civil Case No. 97-0519-S-BLW) directing the BLM to complete the review of the allotments associated with the 68 grazing permits.

Livestock grazing in the Pole Creek Allotment was to follow the 1997 grazing permit until a new EA was completed and a final decision was issued. From 1997 through 2007, 500 cattle were authorized to graze the Pole Creek Allotment from July 1 through September 30 (1,468 AUMs) with no specified pasture rotations, although certain rotations were identified on actual use forms. In 2003, BLM developed an EA for grazing the Pole Creek Allotment and issued a final decision in September 2003. This decision was administratively appealed, and after a change in permittees, the decision was remanded. [Appeal #ID-096-04-001 (WWP, IBH, CIHD) and #ID-096-04-015 (Mendieta)]

Additionally, the BLM entered into a Stipulated Settlement Agreement with WWP on May 15, 2008. This agreement limited livestock grazing to 1,467 AUMs (a slight discrepancy of one AUM was made between the agreement and the 1997 grazing permit – 1,468 AUMs) and agreed to removal of livestock from the pasture or allotment if monitoring criteria (interim terms and conditions) were exceeded, and to make changes the following year if criteria were exceeded.

1.6.3 Statutes

The BLM OFO is required to comply with all relevant Acts, including the NEPA, Clean Water Act, Clean Air Act, Migratory Bird Treaty Act, FLPMA, Taylor Grazing Act, Bald and Golden Eagle Protection Act, and the Code of Federal Regulations in 43 CFR 4100.

In addition to the above Acts, the National Historic Preservation Act, Native American Graves Protection and Repatriation Act, and American Indian Religious Freedom Act are pertinent to this Proposed Action. Southwest Idaho is the homeland of two culturally and linguistically

related tribes: the Northern Shoshone and the Northern Paiute. In the latter half of the 19th century, reservations were established at Duck Valley on the Nevada/Idaho border west of the Bruneau River. The Shoshone-Paiute Tribes residing at Duck Valley today actively practice their culture and retain aboriginal rights and/or interests in this area. The Shoshone-Paiute Tribes claim aboriginal rights to their traditional homelands as their treaties with the United States, the Boise Valley Treaty of 1864 and the Bruneau Valley Treaty of 1866, which would have extinguished aboriginal title to the lands now federally administered, were never ratified.

The Bureau of Land Management (BLM) is required to consult with Native American tribes to "help assure (1) that federally recognized tribal governments and Native American individuals, whose traditional uses of public land might be affected by a proposed BLM action, will have sufficient opportunity to contribute to the decision, and (2) that the decision maker will give tribal concerns proper consideration" (U.S. Department of the Interior, BLM Manual Handbook H-8120-1). Tribal coordination and consultation responsibilities are implemented under laws and executive orders that are specific to cultural resources, referred to as "cultural resource authorities," and under regulations that are not specific, termed "general authorities." Cultural resource authorities include: the National Historic Preservation Act of 1966, as amended (NHPA); the Archaeological Resources Protection Act of 1979 (ARPA); and the Native American Graves Protection and Repatriation Act of 1990, as amended (NAGPRA). General authorities include: the American Indian Religious Freedom Act of 1979 (AIRFA); the National Environmental Policy Act of 1969 (NEPA); the Federal Land Policy and Management Act of 1976 (FLPMA); and Executive Order 13007-Indian Sacred Sites. The proposed action is in compliance with the aforementioned authorities.

1.6.4 Collaborative Habitat Management Plans

The purpose and need for the action is also consistent with objectives and management actions for the following wildlife habitat conservation plans developed cooperatively by diverse groups of agency, conservation, and sportsmen interests.

2006 Conservation Plan for Greater Sage-grouse in Idaho: The Idaho Sage-grouse Advisory Committee developed a conservation plan in 2006 (ISAC 2006), and the Owyhee Sage-grouse Local Working Group (LWG) (2004) developed a plan in 2000, updated in 2004. Conservation plan objectives include:

- Manage Idaho's landscape to foster a dynamic sagebrush ecosystem that includes a diverse species composition of sagebrush, grasses, and forbs; and incorporates structural characteristics that promote rangeland health in general, and sage-grouse habitat requirements in particular.
- Manage conifer encroachment to restore sage-grouse habitat improving understory habitat quality in areas where sagebrush cover limits the herbaceous cover needs of sage-grouse, improving understory quality where sagebrush cover is otherwise suitable.

The North American Mule Deer Conservation Plan: "restore or improve mule deer habitat function throughout mule deer range" (MDWG 2004). The most relevant objectives include:

- Proactively manage shrub communities (using prescribed fire, mechanical treatment, or other approaches, as appropriate, at a site specific basis) to maintain mosaics of uneven aged stands to enhance habitat conditions for mule deer.
- Manage mule deer habitat in a fashion to control type conversions (i.e., conversion of rangeland to croplands, and shrublands to monotypic pinyon-juniper stands).
- Allow normal fire regimes to occur where this practice does not pose high risk to human developments.

Coordinated Implementation Plan for Bird Conservation in Idaho: (Idaho Steering Committee Intermountain West Joint Venture 2005): Juniper/pinyon pine/mountain mahogany habitats (page 23):

- Protect, maintain, enhance and/or restore historical juniper woodland habitat, limit further expansion into adjacent grasslands, shrublands, aspen, and riparian areas, and restore encroached habitats by removing juniper woodlands through active management.

2.0 Description of the Alternatives

2.1 Alternative Development Process

Six alternatives have been developed and analyzed to renew the 10-year grazing permit for livestock grazing in the Pole Creek Allotment. Alternative A1 reflects current grazing management in accordance with the 2008 Stipulated Settlement Agreement and Alternative A2 reflects grazing management prior to the Settlement Agreement. Alternatives B, C1, C2, and D were developed to improve grazing management practices necessary to make significant progress toward meeting Standards and to meet ORMP objectives and other applicable management and resource objectives.

2.2 Management Common to All Alternatives

The following apply to all alternatives, unless otherwise specified.

A Water Quality Restoration Plan (Appendix D) would be implemented once an alternative is selected.

2.2.1 Inventory and Monitoring

- Monitoring studies would be conducted during the term of the permit in accordance with the Idaho Minimum Monitoring Standards (USDI-BLM 1984) and IM ID-2008-022 (Monitoring Strategies for Rangelands) (USDI- BLM 2008a). Monitoring studies (1-6 years) would include, but are not limited to, the following: nested plot frequency, upland utilization, browse utilization, photo plots, multiple indicator monitoring (MIM), stubble height measurement, bank alteration, riparian woody browse utilization, and water quality testing.
- Pretreatment inventories for the proposed treatment areas (juniper treatments and range improvement projects) would include wildlife, botanical, and cultural surveys.
    - Pretreatment wildlife surveys would include raptor nest surveys and Columbia spotted frog occupied habitat monitoring.

- Surveys to inventory raptor nest sites within treatment areas would be conducted year-round. Pretreatment field surveys would be completed prior to juniper treatments planned to occur during the breeding season to identify active and inactive raptor nest sites. For juniper treatments scheduled to occur during the breeding season, breeding activity status would be confirmed between May 15 and August 15 of the current breeding season.
- Appropriate measures (such as altering juniper cutting and ignitions or moving the fence location) would be implemented as practicable around raptor nests and Columbia spotted frog occupied habitat (see Section 2.2.4).
- Special status plant surveys have been conducted at proposed range improvement sites and representative juniper treatment areas, and in some situations fence locations have been adjusted to minimize effects to special status plants (Corbin 2010).
- Cultural inventories have been completed. Monitoring of significant sites would be conducted to assess any damage that may be attributed to juniper treatments, livestock management activities or natural processes.

- Noxious weed control is ongoing in this area. Populations are recorded, treated, monitored, and retreated as long as they persist. Undiscovered noxious weeds may also exist. Therefore, inventories would be conducted prior to treatment within the proposed areas. The effectiveness of weed control would be monitored using site-specific and landscape level methods.
  - Site-specific weed monitoring would involve assessing the effectiveness of the treatment or control method on specific weed species relative to application rate, method, and treatment area. Monitoring methods may be qualitative or quantitative and would be commensurate with the level of treatment complexity, size, and extent of infestation. The methods used to monitor treated areas may include field observations, photo plots, and/or density plot methods. Management actions may be refined or changed over time as these data are analyzed.
  - Landscape level weed monitoring would be accomplished over the long term by tracking weed occurrences through Geographic Information System (GIS) mapping. Weed sites would be inventoried and mapped on-the-ground to monitor their extent and rate of spread.

2.2.2 Management Objectives (Alternatives A1, A2, C1, C2, and D)

The following management objectives would be monitored to help determine whether Standards are being met with the grazing management prescribed and to evaluate implementation of the permit and juniper treatments, as applicable. The BLM-developed alternatives were designed to conform to ORMP goals and attain the management objective values to a greater or lesser extent, per objective and alternative, and thus moving toward achieving Standards. The below objectives articulate allotment-specific objectives and are not terms and conditions of the permit. Rather, they are used to periodically evaluate whether terms and conditions (particularly animal numbers and dates) are resulting in the expected management effects, such as proper utilization. This information would be used to inform future decisions. Exceeding an objective in any given year would not necessarily trigger any action by the BLM. However, the BLM may choose to take action if necessary.

Objectives:

- Utilization of key upland herbaceous forage species by livestock of no more than 40% if a pasture includes rest or deferred rotation.
- Utilization of key upland herbaceous forage species by livestock of no more than 40% if a pasture is grazed during the critical growth period (when perennial grasses are actively growing) every year.
- Utilization of key browse species of no more than 30% in mule deer winter range and no more than 40% in other habitats (ORMP Map WDLF-1 page M-7).
- Streambank alteration by hoof impacts less than 10% in linear area.
- Herbaceous riparian residual stubble height of at least 4 inches (where applicable) at the end of the growing season.
- Utilization of riparian willows less than 25% on shrubs under five feet in height.
- Seral juniper mortality of 50-70% within Phase 2 and 3 juniper encroachment (See Section 3.1.1) areas post-treatment.
- Post-broadcast burn canopy and ground cover of herbaceous vegetation at least 80% of what is found in the unburned islands and adjacent areas after the second growing season.
- Post-broadcast burn aspen leaders an average height of at least four feet on areas accessible to livestock after the second growing season.

2.2.3 Range Improvement Projects (Alternatives B, C1, C2, and partial D)

In addition to changes in livestock grazing management and juniper treatments, the following range improvement projects are necessary to move toward meeting Standards by improving the overall management of livestock on public land in the Pole Creek Allotment and implementing grazing management identified under Alternatives B, C1, C2, and D (Maps 2 and 3). Any new fences located on public land would conform to the specifications for standard livestock fences in deer/elk/pronghorn habitat, in accordance with the ORMP or Boise District Office fence specifications and fence marking guidelines (IM # ID-100-2011-001). Construction would utilize techniques to minimize disturbance, as practicable. Total miles of fence would include up to 3.6 miles of new construction, of which 2.1 miles would be along the Oregon/Idaho border.

The following range improvements would be constructed as shown on Maps 2 and 3:

- State Line Fence – Approximately 2.1 miles of Oregon State Lands and Owyhee Field Office BLM lands would be fenced/gap fenced on the Oregon/Idaho state line. This would be a 4-wire, smooth bottom wire fence. Much of the fence in the Pole Creek Breaks area would be gap fences on ridge tops above steep, impassable drainages/canyons. Currently, livestock can move to/from Oregon/Idaho when livestock are not authorized to graze the other side. These fences/gap fences would prevent livestock drift in these areas and facilitate orderly administration of public lands.
- Horse Flat Pasture Division Fence – Approximately 1 mile of new 3-wire (smooth bottom) fence would be constructed and tied into the Pole Creek Fence, a cliff above CCC Spring, and a small gap fence near the Middle Fork Owyhee River. A cattleguard would be placed where the fence crosses the road. The division fence would create an additional pasture, allowing for pasture rotations, additional rest, and a shorter duration of grazing in the Horse Flat and Scott Spring Pastures. This gap fence would restrict

livestock use of the upper part of the Middle Fork Owyhee River on the Pole Creek Allotment.

- Middle Fork Owyhee River Exclosure – Approximately 0.5 miles of new 3-wire (smooth bottom) fence would be constructed on the north side of the Middle Fork Owyhee River to provide an exclosure. Currently, the site is a large water gap for livestock watering. This water source is not needed for livestock because several other water sources are available nearby. With this exclosure and other gap fences, approximately 0.25 miles of the river would be accessible from the Pole Creek Allotment, while approximately 4.7 miles of the Middle Fork Owyhee River would be inaccessible to livestock.
- Middle Fork Owyhee River Gap Fences (2) – Approximately 50 ft. each of new 3-wire (smooth bottom) fence would be constructed in the Middle Fork Owyhee River canyon. One gap fence would be located at the Idaho/Oregon boundary and the other would be upriver approximately 2.5 miles to restrict livestock down the river. Because it is a steep isolated area, once livestock go down to the river, they usually do not come out until livestock are removed from the pasture. These gap fences would restrict livestock access to the lower portion of the Middle Fork Owyhee River.
- Scott Spring Creek Gap Fence – Approximately 50 ft. of new 3-wire (smooth bottom) fence would be constructed in the canyon below Scott Spring to restrict livestock down the creek. The canyon is very narrow and livestock tend to trail down into the Middle Fork Owyhee River.
- Little Willow Springs Gap Fence – Approximately 50 ft. of new 3-wire (smooth bottom) fence would be constructed in the canyon below Little Willow Spring to prevent livestock from trailing down the steep canyon. The canyon is very narrow and livestock tend to trail down into the Middle Fork Owyhee River.
- Little Willow Spring Exclosure Expansion – The existing exclosure around Little Willow Spring would be expanded to include the entire wetland area and protect thinleaf goldenhead, a special status plant. The pipeline and trough would be moved away from the spring approximately 100 ft. The current trough is <50 feet from the very small exclosure, which only includes approximately 25% of the riparian area/meadow. This expansion would include almost all of the riparian area/meadow.
- Big Willow Spring Exclosure Expansion and Rehabilitation – The existing Big Willow Spring Exclosure would be expanded to protect the upper end of the riparian area. Big Willow Spring would be recontoured to restore the natural topography with surrounding areas. During the last 10 years, an unknown individual(s) dug out a portion of the spring and did not back fill or remove materials. Recontouring would provide a more natural appearance, and a small headcut would be fenced in to provide an expedited recovery. A headcut is an erosional feature where an abrupt vertical drop in the stream bed occurs and typically resembles a small waterfall or, when not flowing, the head cut will resemble a very short cliff or bluff.
- CCC Spring Exclosure – An exclosure around CCC Spring would be constructed to protect cultural sites and riparian areas.
- Manada Flat Spring/Pipeline Reconstruction (1 trough) – Manada Flat Spring/Pipeline would be reconstructed where leaking. The current pipeline is broken and is not producing adequate water to the trough, which would improve water availability and livestock distribution.

- Manada Flat Juniper Cutting Area Fence Removal – Approximately 1 mile of barbed wire fence in disrepair would be removed from an old juniper treatment area north of Scott Spring. This fence is currently a hazard to wildlife and livestock, and removal would reduce the potential of injury or entanglement.
- Pole Creek/Trout Springs Allotment Cattleguard – One cattleguard would be placed at the fenceline where the road enters the Pole Creek Allotment from Bedstead Ridge. This would reduce the risk of the gate being left open which would result in unauthorized use.
- Horsehead Spring Rehabilitation – Recontour and revegetate surrounding soils to restore the natural topography with surrounding areas. During the last 10 years, an unknown individual(s) dug out a portion of the spring and did not back fill or remove materials. Recontouring would provide a more natural appearance.

2.2.4 Juniper Treatments/Management (Alternatives B, C1, C2, and D)

Identical juniper treatments are proposed for Alternatives B-D; no juniper treatment is included in Alternatives A1 or A2. These treatments would be implemented over the next 10 years to meet the ORMP objectives identified in Section 1.5, and to maintain/restore existing shrub steppe, aspen, and riparian communities that are/have transitioned to juniper woodlands (Map 4). Two types of treatments are proposed: hand cut/girdle and broadcast burn on approximately 5,500-7,700 acres within an 11,000-acre perimeter (target of 50-70% mortality of seral juniper) and hand cut/girdle and jackpot burn within a 9,900-acre perimeter, approximately 4,950-6,930 acres (See Figure JUN1 below). The Horse Flat, Scott Spring, and Berry Gulch Pastures would be treated first, then after two growing seasons of rest, the Pole Creek Breaks and Dutcher Pastures could be treated. Although the total treatment area is approximately 21,000 acres, only portions of this acreage would actually have treatments occurring in them. See figure JUN 1, below, for a more complete explanation of these proposed treatment areas.

Hand girdling consists of cutting around the tree's circumference into the cambium, killing the tree, and is an effective method for controlling larger juniper trees, especially in dense juniper stands. Girdling prevents the need for felling the larger trees, thereby reducing ground fuel loading to a treated area, and resulting in less soil heating when the slash is burned. Girdling is also less visually intrusive than felling as girdled trees look as though they were naturally killed by fire. Girdling creates cavity nesting trees for a variety of bird species.

Broadcast burning consists of allowing fire to naturally carry within a prescribed burn perimeter, similar to a natural wildfire. Jackpot burning or slash burning consists of burning downed trees and parts thereof. The purpose of this treatment is to consume slash remaining from cutting treatments. This treatment occurs in the late fall and winter month when conditions are cool and moist, thereby preventing fire from spreading outside of the slash, and to minimize heat input into the soil.

In either the broadcast burn or jackpot burn treatment areas, old growth junipers would <u>not</u> be targeted. Old growth trees are identified by their rounded, flat, or irregularly shaped canopies as opposed to seral trees which are easily distinguished by their conical (Christmas tree) appearance. Additional indicators of old growth trees include deeply furrowed, fibrous, and reddish bark; presence of lichens; and large branches near the base of the trunk (Miller et al.

2005). Concentrations of old growth juniper are not being targeted, and are not expected to burn because old growth juniper is largely restricted to rocky, sparsely vegetated sites that historically burned infrequently. A lack of fine fuels associated with these sparsely vegetated sites resulted in infrequent fires, thereby making juniper the climax species there. Old growth junipers are valuable for wildlife habitat, plant community structure diversity, and scenic values.

Juniper treatment would occur in areas where good herbaceous plant recovery is expected, based on the soil types, precipitation zone, and existing plant composition. Therefore, large-scale post-fire broadcast seeding is not planned. A possible exception may be in the event that fire breaks are constructed in the event of an escape fire situation. In that case, the fire breaks and any other unplanned disturbed areas would be broadcast seeded (with native seed only) and where practicable harrowed with a 4-wheeler, as discussed under the Standard Operating Procedures.

Juniper expansion results in a loss of the herbaceous component (Miller et al. 2000) of the upland sage-steppe ecosystem. Juniper treatments would likely result in an increase in the herbaceous component benefitting wildlife and livestock alike. The objectives of the juniper treatments are to restore and maintain the native shrub steppe, aspen, and riparian communities of this area, and to restore the natural role of fire on the landscape for the long-term maintenance of these communities - not to increase livestock forage. Although forage is expected to increase as a result of juniper treatments, alternatives were not developed or analyzed with the expectation of increasing livestock use.

Hand cut/girdle and broadcast burning: This treatment would occur primarily within the mountain big sagebrush, mountain shrub, mountain mahogany, riparian, meadows, and aspen sites heavily encroached by juniper. The mountain big sagebrush, mountain shrub, and mountain mahogany potential sites are represented by the Loamy 13-16" and Mahogany Savanna 16-22" ecological sites (Map 5). The riparian, meadow, and aspen communities occur as small inclusions within these larger ecological sites. This treatment would occur in parts of the Pole Creek Breaks and Scott Springs Pastures.

To build a consistent fuel layer that would carry prescribed fire within these targeted plant communities, approximately 10-30% (but potentially up to 100% in some areas) of the seral juniper trees would be cut or girdled with chainsaws. The combination of cutting and girdling provides a fuel layer that is receptive to ignition, can carry fire into tree crowns, and generally limits (controls) where prescribed fire will burn, based on where the cutting and girdling occurs.

Smaller, seral juniper trees, less than 12 inches in diameter, would be completely severed from the stump and felled, while some of the larger seral trees would be girdled. After completion of these treatments, the areas would be broadcast burned in the fall. This timeframe for burning can occur from August to October, depending on the elevation and year's weather. The proposed units would be ignited primarily by helitorch, with some ground ignition. Standard operating procedures to reduce smoke emissions on prescribed burns include burning under dry fuel conditions and when the weather is predicted to carry smoke up and away for better atmospheric dispersion.

The broadcast burn would be implemented under conditions designed to result in 50-70% seral juniper mortality within the targeted vegetation types (See Figure JUN1 below). If this level of mortality is not reached in the initial broadcast burn, subsequent treatments may be implemented to achieve this objective. A mosaic of burned and unburned patches within the broadcast burn units is expected. This mosaic would be affected by the amount of vegetation present, degree of cutting/girdling, localized topography, weather and fuel moisture conditions during the prescribed burn, and ignition methods and patterns. Fire is an imprecise tool, so results cannot be guaranteed, but a mosaic of burn patch sizes from ½ acre to about 20 acres is anticipated, although larger burn patches would be acceptable. Broadcast burn ignition would concentrate on seral juniper rather than patches of sagebrush or mahogany within the broadcast burn units.

Hand cut/girdle and jackpot burning: This treatment would be used in shallow claypan and very shallow stony loam sites. Seral juniper would also be cut out of inclusions of riparian, aspen, old growth juniper stands, and meadows occurring within these larger ecological sites. These areas include the Horse Flat, Berry Gulch, and Dutcher Pastures and part of the Pole Creek Breaks Pasture, comprising approximately 4,950-6,930 acres within a 9,900-acre perimeter (See Figure JUN1).

This treatment also consists of hand cutting/girdling but instead of following up with broadcast burning, the concentrations of debris created, or jackpots, would be burned in the late fall or early spring. No piling of debris would occur. In low density juniper areas, the slash may be left on-site and not burned. Also, most of the seral trees in targeted areas would be cut/girdled, as opposed to just a percentage under the broadcast burn treatment. This treatment allows for only the jackpot of fuels to be burned and not the surrounding vegetation. Since burn patches would normally be confined to the individual tree debris zone, most patches would be small (less than two acres), although some larger patches may also occur.

Non-Treatment Areas: Areas not targeted for juniper treatment include the Pole Creek Breaks in the Pole Creek Breaks Pasture. Additional non-targeted areas include old growth juniper and old growth mahogany inclusions that lack encroaching juniper within the larger broadcast and jackpot burn units, where practicable. Some examples of old growth inclusions are near Duke's Hole, the rim above CCC Spring, and the drainage below Scott Spring (See Map 4 and Figure JUN1).

Although no pre-burn cutting or intentional lighting would occur within these areas, fire may inadvertently carry into some of these sites because no fire control lines would be constructed around them. However, since no pre-burn cutting would occur, it is unlikely that fire would carry far into these non-targeted stands under the weather conditions specified in the burn prescription.

Figure JUN1. Juniper Treatment Example for Scott Spring/Horse Flat/Berry Gulch Pastures (Pasture 1B). Within the treated area in the Pole Creek Breaks Pasture (Pasture 1A), a similar treatment pattern would be expected.

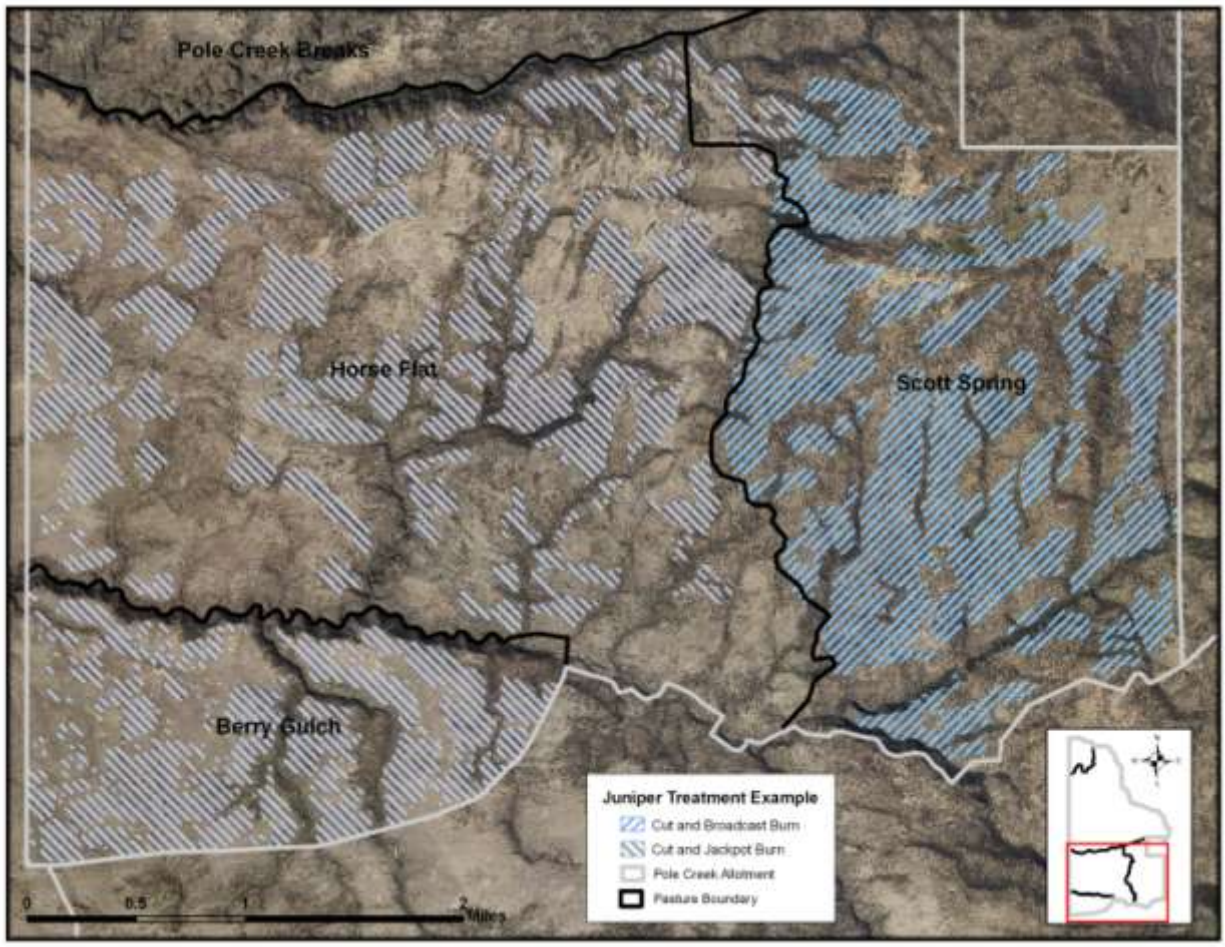


Figure JUN1 depicts the estimated spatial extent of proposed juniper treatments. As identified on the figure, topography, soil type, and old growth areas have been taken into account, although the entire area is within the identified treatment areas. This figure demonstrates POSSIBLE exclusions within the treatment area and may/would look different after confirmation of old growth, rocky, or seral juniper sites. Of the 3,323 acres within the Scott Springs Pasture (part of Pasture 1B) identified for hand cut/girdle and broadcast burning, Figure JUN1 shows an example of approximately 50% actually being burned/treated. Of the 7,127 acres within the Horse Flat/Berry Gulch Pastures (Pasture 3 and part of Pasture 1B) identified for hand cut/girdle and jackpot burning, Figure JUN1 shows an example of approximately 33% actually being burned/treated.

Standard Operating Procedures (SOPs) for Pole Creek Allotment Juniper Treatments

Broadcast Burning

- To minimize heat and smoke exposure to fire holding crews and minimize ground disturbance that would result from establishing new fire breaks, existing natural and human-made fire breaks would be used where possible. Accordingly, about 1,730 acres of Idaho State and private land located within or adjacent to the Pole Creek Allotment is included

within the broadcast or jackpot perimeter and may be treated simultaneously with the BLM portion, with proper authorization from the land owner.

- On short portions of existing roads, dozers or graders may be needed to clean out vegetation which could compromise the roads usefulness as firelines, and to improve small portions of these roads which may be inaccessible to vehicles associated with burning efforts. No widespread road grading is anticipated nor is the use of this equipment outside of existing roads. A possible exception would be to protect structures on private lands included in the burn perimeters, and to create fuel breaks between the public and private land should the private landowners decide not to allow BLM to burn on their land.
- Fire engines, support vehicles, and ATVs would be used to contain the fire within control lines. Travel would be restricted to existing trails when possible, but may require some off-road travel.
- In accordance with BLM prescribed fire policy, a contingency area is proposed outside the burn perimeters to act as a buffer should a fire burn outside the perimeters. If this happens, the fire would be suppressed in the contingency area and burning operations could then continue in the project area.
- The undercarriage of all vehicles involved in the prescribed burn would be cleaned before traveling to the project area to reduce the introduction of noxious weed seed. Additionally, increased weed treatments would occur on known sites within broadcast burn areas.
- Burning would be conducted in accordance with the Idaho-Montana Airshed Group guidelines. Permission from the Airshed group is required prior to ignition to ensure local air quality standards would be met.
- Unless agreed to otherwise, treatments would be implemented in stages so permittee(s) would not have to rest more than half of the allotment during any given stage of implementation.
- Besides prescribed burns, wildfire would be allowed to play its natural role through the use of unplanned ignitions under conditions appropriate to achieve the specified broadcast burn objectives, in accordance with the Boise District Fire Management Plan.
- Ignition would not occur in the Squaw Creek canyon.
- Broadcast burning would not be conducted within identified key sage-grouse habitat (Map 6).
- Pretreatment fire crews would take appropriate measures based on topography, vegetation, and fuel loads to ensure that broadcast burning does not remove or damage raptor nest trees and/or nest tree stands (i.e., northern goshawk).
- Broadcast burning would not be conducted within BLM-stipulated buffer zones of raptor nest sites during the breeding season. Buffer zones would be dependent on species, seasonal timing restrictions, and nest site activity status (See Raptor Timing and Buffer Stipulations below). Because nesting raptors may be shielded from disturbance by vegetation and/or topographic features, buffer areas may be individually developed and modified based on 3D analytical methods and/or landscape features (e.g., viewshed analysis, physiographic barriers such as cliffs and canyons, etc.).

Table SOP1. Raptor Timing and Buffer Stipulations

Species	Timing[1]	Breeding Season Nest Site Buffer (miles)[2]

Ferruginous Hawk	Apr 1 – Aug 15	0.50
Golden Eagle	Feb 1 – Aug 15	0.50
Northern Goshawk	Apr 1 – Aug 15	0.50
Other Raptors	Apr 1 – Aug 15	0.25

[1]Indicates timeframes for prohibiting broadcast burning around nest sites with active breeding attempts or until dispersal of young.
[2]Buffers apply to nest sites with active breeding attempts.

- Any new raptor nests discovered during treatment activities would be reported within 24 hours by phone or E-mail to the OFO Wildlife Biologist. Protection of these nest sites will be handled on a case-by-case basis.
- Pre-treatment fire crews would take appropriate measures based on topography, vegetation, and fuel loads to ensure that broadcast burning does not remove or damage Columbia spotted frog occupied habitat.
- Impacts to Columbia spotted frogs would be avoided by prohibiting vehicles within occupied habitat.
- Native species are expected to respond favorably to juniper treatments and changes in livestock management. The need to apply seed is not anticipated except in localized disturbed areas, such as if fuel breaks need to be created as discussed above. Any seed used for re-vegetation would ideally be native species from a locally collected seed source (Johnson et al. 2010). However, since local-genotype seed is not generally available, the most suitable available seed source would be used. Persistent non-native species would not be planted.
- All archaeological inventories are coordinated in consultation with affected Tribes and the Idaho State Historic Preservation Office. Sites with combustible features would be protected during the deployment of prescribed fire by black-lining resources and use of appropriate ignition techniques. The OFO Archaeologist would review burn plans prior to project implementation. If significant cultural resources are encountered within areas of potential effect, project implementation would be postponed and the OFO Archaeologist would be notified. Prior to resuming work, historic property documentation and evaluation would be completed. Mitigation plans would be developed in consultation with the Idaho State Historic Preservation Office and the Tribes, if necessary.
- Pastures with more than an incidental amount of broadcast burning would require rest for the year prior to burning (to provide adequate fine fuels to carry the prescribed burn), and would require a minimum of two growing seasons rest from livestock grazing following prescribed fire. Evaluation guidelines for resuming grazing include:
  - Canopy and ground cover of herbaceous vegetation should be approximately 80% or more of what is found in the unburned islands and adjacent areas after the second growing season.
  - Aspen leaders should reach an average height of four feet or more on areas accessible to livestock.

Hand Cutting and Girdling Treatments

- Pre-burn juniper felling, cutting branches or girdling would be used to increase surface fuels where needed to carry fire.

- Seral juniper adjacent to old growth junipers would be cut and removed from the old growth trees, where practicable.
- Undercarriages of ATVs would be cleaned before entering the treatment areas to reduce the introduction of noxious weed seed.
- In accordance with the ORMP, juniper products, such as fire wood and posts would be made available to the public where feasible.
- Pickups and larger vehicles associated with cutting treatments and wood gathering activities, as well as support vehicles, would be restricted to established roads and trails.
- Trees would be cut to a stump height of eight inches or less.
- No live branches would remain on the stump after the juniper tree is cut.
- Cutting crew camp locations would be pre-approved by the Authorized Officer.
- Cutting within identified key sage-grouse habitat (Map 6) would be completed between July 15-January 30.
- Removal or disturbance (i.e., limbing) would not occur to any tree containing a raptor nest (including large cavities suitable for nesting).
- Cutting activities would not occur within ¼ mile of active ferruginous hawk, golden eagle, or northern goshawk breeding attempts or ⅛ mile of other active raptor breeding attempts until failure or dispersal of young. For cutting treatments scheduled to occur during the breeding season, activity status would be confirmed between April 15 and August 15 of the current breeding season. Because nesting raptors may be shielded from disturbance by vegetation and/or topographic features, buffer areas may be individually developed and modified based on a viewshed analysis.
- Any new raptor nests discovered during treatment activities would be reported within 24 hours by phone or E-mail to the OFO Wildlife Biologist. Protection of these nest sites will be handled on a case-by-case basis.
- Maintenance activities consisting of hand cutting young juniper that come in after the initial cutting, girdling, and/or broadcast burning treatments would occur within the next ten years.
- Archaeological sites would be avoided within the cutting areas.

2.2.5 Livestock Trailing/Crossing (Alternatives A1-C2)

No more than 750 cattle would be authorized to trail/cross through the Pole Creek Breaks (Pasture 1A) and Dutcher (Pasture 2) Pastures in the spring/summer (between 3/1 and 7/31) and in the summer/fall (between 8/1 and 11/30) (See Maps 2 and 3). Since all cattle would not be expected to trail through the allotment on the same day, no more than four days would be authorized during the spring/summer and no more than four days would be authorized during the summer/fall. Cattle would only trail along the road between the Lowry Ranch in Idaho and the Circle Bar Ranch in Oregon. Livestock would travel within 100 yards from the center line of the road and would be expected to trail through the two mile stretch in approximately 3-5 hours. The individual/company must apply for this use prior to trailing/crossing. Annual authorizations (bills) would be issued to the individual/company prior to trailing/crossing. It is the cattle owner's responsibility to comply with all state (brand inspections prior to crossing into other states) and federal laws and to coordinate with associated private land owners. Although 50 AUMs would be authorized for trailing/crossing, cattle would be actively trailing at all times and much less than 50 AUMs are expected to be utilized.

Table LT1. Livestock Trailing/Crossing.

Operator Name (Number)	Livestock		Season of Use	Federal Land	Type Use	AUMs
	Num.	Kind				
N/A	750	Cattle	03/01 – 07/31	100%	Trailing	25
	750	Cattle	08/01 – 11/30	100%	Trailing	25

Other Terms and Conditions

1. Trailing/crossing would only occur for up to four days in the spring/summer within 03/01-07/31 and up to four days in the summer/fall within 08/01-11/30 through the Pole Creek Breaks (Pasture 1A) and Dutcher (Pasture 2) Pastures. Livestock would actively trail at all times during the 2 mile crossing of public land.
2. Livestock would not meander more than 100 yards from the center line of the road.
3. Trailing/crossing is subject to Boise District Range Readiness Criteria (see Appendix E). Spring trailing would require firm soils only. Vegetation may not meet criteria at the time of trailing; therefore no vegetation is expected to be grazed due to active trailing the entire length.

2.3 Alternatives Considered But Not Analyzed in Detail

A. Area of Critical Environmental Concern (ACEC). An alternative was considered to designate Juniper Mountain as an ACEC as proposed by Western Watersheds Project on August 31, 2009. This alternative was determined to be on a larger scale and outside the scope of this EA and should be analyzed, developed, and considered through the Land Use Plan process (43 CFR 1610.7-2). In fact, an ACEC for Juniper Mountain was analyzed in the Proposed Owyhee Resource Management Plan and Final Environmental Impact Statement (PORMP/FEIS), Alternatives C and D (USDI-BLM 1999a); however, it was not selected in the final decision (USDI-BLM 1999b). There are no material changes since 1999 that would justify reconsideration of this alternative in detail. This EA is intended to address Standards and Guidelines requirements and renewal of the Pole Creek Allotment Livestock Grazing Permit through grazing management modification and associated projects, including juniper treatments, to meet Standards. Therefore, the ACEC alternative was considered but not analyzed in detail.

B. Hand cutting the entire area without broadcast or slash/jackpot burning. During scoping, the need for broadcast burning was disputed by WWP; they suggested the targeted treatment areas be hand cut without broadcast burning or slash/jackpot burning. Recent studies by Bates and Svejcar (2006) found that, in dense juniper areas, unburned debris tended to smother perennial forbs and most perennial grasses, and reduced their establishment due to reduced light levels. They also found that perennial grass density and cover increased faster under burned debris than unburned debris. Additionally, leaving the piled juniper debris on-site could present a fuel load problem for several years following treatment (Miller et al. 2005). Also, this alternative would not maintain vegetative covertype mosaics that provide diverse habitat for mule deer and other wildlife, and would not restore desired fire regimes. For these reasons, the BLM did not consider this alternative in detail.

C. 2003 Decision. The 2003 EA and Final Decision for the Pole Creek Allotment specified 1,468 Active AUMs under the following management: 500 cattle from May 16 – July 15 for two consecutive years in each of Pasture 1A and Pastures 1B/3, and 249 cattle from October 1 – November 15 on the alternate pasture(s), contingent on adequate precipitation and an upward riparian habitat trend. The option of grazing Pastures 1A, 1B, and 3 in the fall rather than spring was also included. Pasture 2 would be used with 66 cattle every year from October 1 – November 30. This alternative was not carried forward in this document because it is similar to alternatives that are analyzed in detail, such as the total use (1,468 AUMs) the same as Alternative A2, the season of use similar to Alternative B (spring/fall), and deferment similar to the rest incorporated in Alternative C.

D. 2009 Scoping Document, Alternative C – Additional Fencing. An alternative was proposed in the 2009 Scoping Document for the Pole Creek Allotment to split the Pole Creek Breaks Pasture (Pasture 1A) into two pastures. Several spring developments and pipelines were also proposed in this alternative. Livestock grazing with 500 cattle was proposed from August 16 to November 15 and four upland pastures (Berry Gulch, Horse Flat, Dutcher, and Lower Pole Creek Breaks Pastures) would be created in the Pole Creek Allotment. This alternative was not analyzed in detail because the Pole Creek Breaks Fence (over 5.5 miles), CCC Spring Development (1), and several pipelines/extensions (~9 miles) were found to be unnecessary to make progress toward meeting the Standards and unfeasible to construct because of terrain. Also, several comments from the scoping document posed concerns for the projects, so they were dropped from consideration. Therefore, this alternative and non-essential projects were not analyzed in detail and dropped from further consideration.

E. Key Area Utilization/Actual Use Estimated Carrying Capacity. Estimated carrying capacity was calculated to be 1,917 AUMs on the Pole Creek Allotment. Using utilization and actual use data from 1988-2011, the following formula was used to calculate the estimated carrying capacity:

$$\frac{\text{Actual Use}}{\text{Actual Utilization}} = \frac{\text{Estimated Carrying Capacity}}{\text{Objective/Desired Utilization}}$$

Desired or objective utilization levels for the allotment were calculated using 50% for herbaceous species due to livestock use during the summer (see Section 2.2.2). The actual use used in this formula was determined from the start of the grazing season through the date utilization was read from 1988-2011. All data were used for all years that both actual use and utilization data were available in the initial calculations (Appendix A). When utilization levels were recorded for more than one species, the highest use level was used (Idaho fescue and bluebunch wheatgrass). This method uses the concept of "limiting factor" which recognizes that the species used the most will determine the level of grazing use that will best manage for maintenance of the key forage species.

This alternative was not analyzed in detail because it is a 31% increase (1,917 AUMs) over the current Active AUMs of 1,468.

F. Livestock Grazing in Accordance with the 2008 Stipulated Settlement Agreement (Including Interim Terms and Conditions) with Reduced AUMs, Livestock Numbers, and Season of Use. An alternative reducing livestock use to 400 AUMs and 200 cattle from July 1 through August 30 was considered but not analyzed in detail. In other words, this alternative would retain the hot season/summer use but would significantly lower livestock numbers and AUMs. Through research and current riparian monitoring on the Pole Creek Allotment, it was concluded that even with this level of reduction (and even further reduction), Standards 2, 3, 7, and 8 would still not be met due to the concentrated livestock use on riparian areas during the hot season. Livestock (especially in Pasture 1B – Horse Flat/Scott Spring Pastures) would congregate around riparian areas and exceed streambank alteration and stubble height terms and conditions, even if AUMs were reduced in this manner (50% less than actual use from 2008-2011; 72% reduction from current permitted use). Utilization would continue to be slight to very light (5-20%) in the uplands, but riparian terms and conditions (stubble height and streambank alteration) would continue to be exceeded. Livestock use would need to be even more severely reduced to meet riparian standards, thereby making this alternative unviable. Consideration of this alternative highlights the need to change the current season of use.

G. Fall Only Alternative. Fall grazing was analyzed in detail as part of Alternative B (Section 3). Alternative B provides the option of authorizing livestock grazing in the fall only. Thus, a separate fall only alternative was not analyzed.

2.4 Description of Proposed Action and Alternatives

2.4.1 Alternative A1 – Continue Present Management from 2008-2011.

Alternative A1 is present management as occurred from 2008-2011. This resulted in actual use of approximately 892 AUMs per year. This incorporates:

- the 1997 term grazing permit,
- interim terms and conditions pertaining to use levels in riparian areas previously incorporated into Judge B. Lynn Winmill's February 29, 2000 Memorandum Decision and Order,
- the May 15, 2008 Stipulated Settlement Agreement terms and conditions, and
- the 2008-2011 average actual use.

Approximately 451 cattle would turnout on the Pole Creek Breaks and Dutcher Pastures (Pastures 1A and 2) on July 1 and move to the Horse Flat and Berry Gulch Pastures (Pastures 1B and 3) on August 1. Turnout into the Horse Flat and Berry Gulch Pastures would occur on August 1 and would be removed by August 31.

Table AA1. Alternative A1 – Pasture Rotation

Pasture	Rotation
Pole Creek Breaks and Dutcher (1A and 2)	7/1-7/31
Horse Flat and Berry Gulch (1B and 3)	8/1-8/31

A total of 892 AUMs would be active and authorized from July 1 through August 31 with 451 cattle. There would be a total of 2,599 Permitted AUMs and 1,707 AUMs would be in suspended use.

Mandatory Terms and Conditions

Table AA2. Alternative A1 – Permitted Use for the Pole Creek Allotment.

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Num.	Kind			Active	Suspended	Permitted
Tommy and Barbara Moore (1103499)	451	Cattle	07/01 – 08/31	97%	892	1,707	2,599

Other Terms and Conditions

1. Key herbaceous riparian vegetation, where streambank stability is dependent upon it, will have a minimum stubble height of 4 inches on the streambank, along the greenline, after the growing season.
2. Key riparian browse vegetation will not be used more than 50% of the current annual twig growth that is within reach of the animals.
3. Key herbaceous riparian vegetation on riparian areas, other than the streambanks will not be grazed more than 50% during the growing season, or 60% during the dormant season.
4. Streambank damage attributable to grazing livestock will be less than 10% on a stream segment.
5. BLM will monitor the following riparian areas in the Pole Creek allotment: Squaw Creek, Middle Fork Owyhee River, Pole Creek, Little Willow Spring Creek, CCC Spring Creek, and Scott Springs Creek. BLM agrees to collect data at these sites on stubble height, streambank alteration, key riparian browse, and use on key riparian vegetation throughout the grazing season. Further, BLM will collect this data at the above-cited riparian areas on two different occasions through the grazing season: (1) at the mid-point of the grazing season for a given pasture; and (2) within two weeks after livestock are removed from a pasture.
6. On the Pole Creek allotment, BLM will order the immediate removal of all livestock from a pasture upon finding that any of the four interim terms and conditions have been exceeded at any riparian area identified above, and BLM shall modify grazing to remedy the exceedences as necessary before the start of the next grazing season.
7. The permittee must properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5) annually. The completed form(s) must be submitted to BLM, Owyhee Field Office (OFO) within 15 days from the last day of authorized annual grazing use.
8. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
9. Pursuant to 43 CFR 10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains,

funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.

10. Turnout is subject to Boise District Range Readiness Criteria (see Appendix E).

Six small exclosures with water troughs near the exclosures would continue to be maintained for spring protection and livestock watering sites. No new range improvements would be constructed.

Livestock trailing would occur in this alternative as described in Section 2.2.5.

No juniper treatments would occur under this alternative.

2.4.2 Alternative A2 – Management in Accordance with the 1997 Grazing Permit

Alternative A2 is management based on the 1997 term grazing permit (prior to the 2008 Stipulated Settlement Agreement). Livestock would turnout on the Pole Creek Breaks and Dutcher Pastures (Pastures 1A and 2) on July 1 and move to the Horse Flat and Berry Gulch Pastures (Pastures 1B and 3) on August 16 through September 30. Livestock would spend approximately 46 days in each pasture.

Table AB1. Alternative A2 – Pasture Rotation

Pasture	Rotation
Pole Creek Breaks and Dutcher (1A and 2)	7/1-8/15
Horse Flat and Berry Gulch (1B and 3)	8/16-9/30

A total of 1,468 AUMs would be active and authorized from July 1 through September 30 with 500 cattle. There would be a total of 2,599 Permitted AUMs and 1,131 AUMs would remain in suspended use.

Mandatory Terms and Conditions

Table AB2. Alternative A2 – Permitted Use for the Pole Creek Allotment.

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Num.	Kind			Active	Suspended	Permitted
Tommy and Barbara Moore (1103499)	500	Cattle	07/01 – 09/30	97%	1,468	1,131	2,599

Other Terms and Conditions

1. Properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5) annually. The completed form(s) must be submitted to BLM, Owyhee Field Office (OFO) within 15 days from the last day of authorized annual grazing use.

2. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
3. Pursuant to 43 CFR 10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.
4. Turnout is subject to Boise District Range Readiness Criteria (see Appendix E).

Six small exclosures with water troughs near the exclosures would continue to be maintained for spring protection and livestock watering sites. No new range improvements would be constructed.

Livestock trailing would occur in this alternative as described in Section 2.2.5.

No juniper treatments would occur under this alternative.

2.4.3 Alternative B – Adaptive Management

This alternative changes the season of use from hot season (July 1 to September 15) to spring (April 15 to June 30) or fall (September 23 to December 8), or a combination thereof, to alleviate impacts to riparian areas associated with the current hot season grazing. Also, Alternative B proposes a maximum use of 1,320 AUMs, an increase in use of 428 Active AUMs compared to Alternative A1 and a reduction of 148 Active AUMs compared to Alternative A2. This alternative was developed to facilitate juniper treatments and the subsequent reestablishment of the natural fire regime by leaving more fine fuels with a reduced stocking rate compared to Alternative A2. This alternative also responds to scoping comments for a wider range of alternatives to improve resource conditions and to progress toward meeting Standards while meeting the purpose and need of this EA. Although this is an increase in Active AUMs compared to Alternative A1, the season of use is very different, which is the driving factor for not meeting Standards (see Section 3.0).

The grazing permit would be issued for a term of ten years. Adaptive livestock management would be implemented in the spring from April 15 through June 30 **OR** in the fall from September 23 through December 8. Adaptive management entails devising a management plan, implementing the plan, monitoring for the desired outcomes, and providing flexibility to adjust livestock grazing practices (rotations, duration, intensity, season of use, etc.) within defined parameters to meet objectives. This adaptive management alternative is designed to meet or make significant progress toward meeting Standards and comply with the ORMP. The Spring Baseline Rotation below would be the starting point for livestock management on the Pole Creek Allotment. The Fall Baseline Rotation below is also identified if it is deemed that fall use in conjunction with spring use (i.e., Year 1 – fall use, Year 2 – spring use, etc.), or fall use alone

would facilitate meeting the standards based on monitoring results. Changing the spring rotation to a fall rotation requires prior approval by the authorized officer.

Table B1. Alternative B – Baseline Rotation – Spring.

Pasture	# of Cattle	On-Date	Off-Date	% PL	AUMs
Pole Creek Breaks	514	4/15	5/23	97%	640
Scott Spring	514	5/24	6/4	97%	197
Horse Flat/Berry Gulch	514	6/5	6/30	97%	426
Dutcher[1]	23	4/15	6/30	97%	57
TOTAL	**537**	**4/15**	**6/30**	**97%**	**1,320**

Table B2. Alternative B – Baseline Rotation – Fall.

Pasture	# of Cattle	On-Date	Off-Date	% PL	AUMs
Pole Creek Breaks	514	9/23	10/31	97%	640
Scott Spring	514	11/1	11/12	97%	197
Horse Flat/Berry Gulch	514	11/13	12/8	97%	426
Dutcher[1]	23	9/23	12/8	97%	57
TOTAL	**537**	**9/23**	**12/8**	**97%**	**1,320**

***Due to the differing size and production of each pasture, and the number of livestock turned out, the amount of time will vary and the above tables are approximate.*

[1] The Dutcher Pasture would only be used as a gathering field. As livestock were gathered, they would stay no more than five days.

Mandatory Terms and Conditions

Table B3. Alternative B – Permitted Use for the Pole Creek Allotment.

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Num.	Kind			Active	Suspended	Permitted
Tommy and Barbara Moore (1103499)	514	Cattle	04/15 – 06/30	97%	1,263	1,279	2,599
	514	Cattle	09/23 – 12/08	97%	1,263		
	23	Cattle	04/15 – 06/30	97%	57		

Other Terms and Conditions

1. Livestock grazing would be in accordance with the Pole Creek Allotment Final Decision dated TBD. The grazing rotation would be as outlined in Tables B1 (Spring Grazing) or B2 (Fall Grazing) of EA #DOI-BLM-ID-B030-2009-0004-EA. Annual Indicator Criteria would be implemented as Terms and Conditions.
2. Lines 1 **OR** 2 on the permit would be used annually. Grazing during the spring **OR** fall would be outlined in annual applications/bills.
3. Line 3 on the permit outlines use in the Dutcher Pasture only.
4. Flexibility would be authorized allowing seven days to make pasture moves, provided pastures are cleared of cattle within seven days following the annually scheduled pasture move date and as long as AUMs are not exceeded.

5. Changes to scheduled grazing use require prior approval by the Authorized Officer.
6. Livestock turnout dates are subject to Boise District Range Readiness Criteria (see Appendix E). If turnout is delayed, livestock numbers may be increased due to a shortened season of use. Livestock numbers would not exceed 600 cattle and Active Use would not exceed 1,320 AUMs.
7. Grazing is not authorized in the Manada Flat, Little Willow Spring, Big Willow Spring, Two Spring, Scott Spring, CCC Spring, Middle Fork Owyhee River, and Horsehead Spring exclosures.
8. Properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5) annually. The completed form(s) must be submitted to BLM, Owyhee Field Office (OFO) within 15 days from the last day of authorized annual grazing use.
9. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
10. Pursuant to 43 CFR 10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.

Listed below are measurable management indicators for spring or fall use that would be applied as terms and conditions. These management indicators are subject to modification based on evaluation of long-term monitoring. For example, should "streambank alteration" exceed 10% over a period of years, but the stream is nevertheless determined to be in an upward trend, this management indicator may be adjusted.

Annual Indicator Criteria (AIC) – Spring

1. Utilization of key upland herbaceous forage species would not exceed 30% in the spring at the time of livestock removal from a pasture (ORMP, pg. 24, #4).
2. Ten percent or less streambank linear area altered by hoof impacts on Middle Fork Owyhee River, Squaw Creek, Peach Creek, Pole Creek, and Section 31 Spring (soil trampling) (ORMP, RIPN1, pg. 14, #4).

Annual Indicator Criteria (AIC) - Fall

1. Utilization of key upland herbaceous forage species would not exceed 50% in the fall at the time of livestock removal from a pasture (ORMP, LVST 1, pg. 24, #4).
2. Limit utilization of key upland browse species, as measured in the fall, to a maximum of 30% within all mule deer winter habitat and 50% within all other habitats. (ORMP, WDLF 1, pg. 16, #4)
3. Ten percent or less streambank linear area altered by hoof impacts on Middle Fork Owyhee River, Squaw Creek, Peach Creek, Pole Creek, and Section 31 Spring (T10S, R5W, Sect. 31) (soil trampling). (ORMP, RIPN1, pg. 14, #4)

4. Retain a 6 inch stubble height on riparian herbaceous vegetation at the end of the grazing period for the Middle Fork Owyhee River, Squaw Creek, and Peach Creek. (ORMP, LVST1, pg. 24, #3)
5. Improve or maintain herbaceous vegetation species to attain composition, density, canopy and ground cover, and vigor appropriate for the site. Adequate residual stubble height in an amount appropriate for the site will be present throughout the grazing treatment and overwinter. This pertains to key sedge and rush species which are excellent streambank stabilizers. (ORMP, WATR1, pg. 11, #2). A four inch stubble height would be used on these areas (i.e., non-redband trout creeks).
6. Riparian woody plants (willows) utilization not to exceed 25% on plants less than 5 feet in height. (ORMP, RIPN1, pg. 24, #3; USDI-BLM 2008, pg. 28)

The AIC would be monitored according to the season of use the livestock are in the allotment (spring or fall in one grazing season, not both) and would be applied according to the "Monitoring and Use Supervision Section" section herein. AIC would be monitored within 15 days of livestock removal from each pasture.

Monitoring and Use Supervision

1. Upland monitoring will consist of data collection as follows:
   a. Utilization studies would be conducted in each pasture annually at the following locations, adjacent to nested plot frequency trend (NPFT) sites. Grasses and shrubs would be monitored using the Key Species Method (Technical Reference 1734-3).
      i. Pole Creek Breaks Pasture – NPFT 11S06W12, NPFT 11S05W18.
      ii. Horse Flat Pasture – NPFT 11S06W26, NPFT 11S06W24, NPFT 11S05W19.
      iii. Scott Spring Pasture – NPFT 11S05W20.
      iv. Dutcher Pasture – NPFT 10S6W22.
      v. Berry Gulch Pasture –NPFT 11S6W35.

2. Riparian monitoring would consist of data collection as follows:
   a. Establishment and annual monitoring of modified Multiple Indicator Monitoring (MIM) sites along the Middle Fork Owyhee River, Squaw Creek, Pole Creek, and Peach Creek (USDI-BLM 2008b) (streambank alteration, stubble height, riparian browse).
      i. Middle Fork Owyhee River – 11S05W33
      ii. Peach Creek – 11S05W05/06
      iii. Squaw Creek – 11S05W05
      iv. Pole Creek – 11S05W17
   b. Additional riparian monitoring, if it is determined to be necessary, would be in accordance with established MIM procedures or other BLM accepted protocols.

If monitoring demonstrates that any of the AIC have been exceeded, BLM personnel would coordinate with the permittee to review the monitoring data, the causal factor(s), and the actual livestock use. If livestock are found to be the causal factor of exceeding an AIC, a "Tool(s)" from the "Tool Box" would be implemented the following grazing season. Two types of issues

would be addressed through the "Tool Box", distribution and overall livestock use within a pasture. The appropriate tool would be used to address the issue identified by the AIC. The extent the AIC is exceeded would determine the "Tool" selected from the "Tool Box" (ie. 14% streambank alteration may only require herding or a change in the pasture rotation, but 30% streambank alteration may require a reduction of cattle or season of use). If for three consecutive years of monitoring the same livestock management meets all AIC, yearly monitoring wouldn't be continued at the same intensity. MIM would revert back to every 3-5 years, and utilization would be collected at least every other year.

Table B4. Alternative B – Tool Box.

Tool	Issue Addressed	Benefit
Herding (2-5 days/wk)	Distribution	Improve isolated distribution problems on upland and/or riparian areas.
Modify Pasture Rotation	Distribution	Reduce livestock focus on upland and/or riparian resources throughout the pasture.
Modify Season of Use – Spring and/or Fall	Distribution	Change the upland and/or riparian resources/areas livestock are focused on.
Shorten Pasture Duration (3-30 days)	Overall Livestock Use	Reduce livestock use or trampling throughout the pasture on upland and/or riparian areas.
Reduce Livestock Numbers (25-100 head{pairs})	Overall Livestock Use	Reduce livestock use or trampling throughout the allotment on upland and/or riparian areas.
Pasture Rest	Overall Livestock Use	Provide upland and riparian resource recovery throughout a pasture.

If any AICs were exceeded, the permittee would be informed immediately. The BLM would coordinate with the permittee upon any "Tools" selected from the "Tool Box." At no time would use of the allotment exceed 600 livestock or 1,320 AUMs. An application of "Tools" could reduce the actual AUMs authorized. Use of the "Tool Box" would be reflected in annual applications/billings for the duration of the permit.

Interim Livestock Management During/Following Broadcast Burn Treatments

- The year of a broadcast burn treatment, the treated pastures, including all AUMs associated with those pastures, would be rested to build fine fuels to aid in the spread of fire.
- Following burning, the entire areas within the broadcast burn pastures would be rested for a minimum of two growing seasons.
- The three growing seasons of rest would require deviations from the proposed rotations. As such, pasture rotations would change and livestock would be removed early and the treated pasture would be rested approximately three growing seasons (one year of rest during the treatment year and at least two growing seasons of rest thereafter). If the fall rotation was implemented and the Horse Flat, Scott Spring, and Berry Gulch Pastures are treated, they would be rested during the treatment year, rested during the first growing season (scheduled to be grazed from 11/1-12/8), and a second growing season of rest would occur, but livestock

may graze these pastures because scheduled use (11/1-12/8) is after the second growing season. Grazing in the treated pasture/s would depend on monitoring data, success of the treatment, and the potential of the area to meet the guidelines. For examples of grazing rotations, see the tables below.

Table B5. Spring

Pasture	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Pole Cr. Breaks	4/15-5/23	4/15-5/23	4/15-5/23	4/15-5/23	4/15-5/23	4/15-5/23	4/15-5/23	R/T	R	R
Scott Sp.	5/24-6/4	5/24-6/4	5/24-6/4	5/24-6/4	R/T	R	R	4/15-4/26	4/15-4/26	4/15-4/26
Horse Flat/Berry Gulch	6/5-6/30	6/5-6/30	6/5-6/30	6/5-6/30	5/24-6/18	5/24-6/18	5/24-6/18	4/27-5/22	4/27-5/22	4/27-5/22
Total AUMs	1,320	1,320	1,320	1,320	1,123	1,123	1,123	680	680	680

Table B6. Fall

Pasture	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Pole Cr. Breaks	9/23-10/31	9/23-10/31	9/23-10/31	9/23-10/31	9/23-10/31	9/23-10/31	9/23-10/31	R/T	R	9/23-10/31
Scott Sp.	11/1-11/12	11/1-11/12	11/1-11/12	11/1-11/12	R/T	R	11/1-11/12	9/23-10/4	9/23-10/4	11/1-11/12
Horse Flat/Berry Gulch	11/13-12/8	11/13-12/8	11/13-12/8	11/13-12/8	11/1-11/26	11/1-11/26	11/13-12/8	10/5-10/30	10/5-10/30	11/13-12/8
Total AUMs	1,320	1,320	1,320	1,320	1,123	1,123	1,320	680	680	1,320

R – Rest.
T – Burn Treatment in the summer/fall.

- During the required rest period for the burned pastures, livestock use would be reduced through annual grazing authorizations on the allotment, and the AUMs associated with the treated pasture(s) would be unavailable. The stocking rates of the authorized (unburned) pastures would not be increased to compensate for the rested burned pastures.

Range improvement projects as described in Section 2.2.3 would be implemented.

Livestock trailing would occur in this alternative as described in Section 2.2.5.

Juniper treatments would occur in this alternative as described in Section 2.2.4.

2.4.4 Alternative C1 – Proposed Action – Spring Use/Rest

This alternative was submitted by the permittee and changes the season of use from hot season to spring to reduce the effects to riparian areas associated with the current grazing system, and incorporates rest. Alternative C1 proposes use of up to 1,029 Active AUMs, which is a 15% increase (137 AUMs) in Active AUMs compared to Alternative A1 and a 30% reduction (439

AUMs) of Active AUMs compared to Alternative A2. Approximately half of the allotment would be rested each year.

This alternative was developed from the PORMP/FEIS, which stated a "Projected 5 and 20 Year Preference" of 1,000 AUMs and specifies a season of use from April 16 through July 15. This alternative is very similar and in conformance with the long-term goals of the PORMP/FEIS and was developed to facilitate juniper treatments and the subsequent reestablishment of the natural fire regime by leaving more fine fuels with pasture rest. This alternative also responds to scoping comments for a wider range of alternatives (including significant reductions in Active AUMs) to improve resource conditions with greater consideration to topography, and to progress more rapidly toward meeting Standards while meeting the purpose and need of this EA. The change in season of use responds to issues identified in Section 1, particularly riparian conditions. A Grazing Permit Renewal for Pole Creek Allotment EA (EA # ID-096-02011) was also completed in August 2003 that analyzed an alternative (Alternative 4) very similar to this alternative.

The grazing permit would be issued for a term of ten years. This alternative would allow 401 livestock to turnout on April 16 and removal on June 30 with a two-year rotation. On Year 1 livestock would graze the Pole Creek Breaks Pasture, and the Horse Flat/Berry Gulch/Scott Spring Pastures would be rested. On Year 2, the Horse Flat/Berry Gulch/Scott Spring Pastures would be grazed and the Pole Creek Breaks Pasture would be rested. This would allow rest five out of ten years for these pastures. The Dutcher Pasture would be used as a gathering field in the spring during the years the Pole Creek Breaks Pasture is used. As livestock were gathered, they would stay no more than seven days. During years that the Pole Creek Breaks Pasture is rested, 38 cattle would be authorized on the Dutcher Pasture from October 1 through November 15.

Table C1A. Alternative C1 – Grazing Rotation.

Pasture	Authorized Use Period		
	Year 1	Year 2	Year 3
Pole Creek Breaks	4/16 – 6/30	Rest	Revert to Year 1
Horse Flat/Berry Gulch	Rest	4/16 – 6/30	
Scott Spring[1]	Rest	4/16 – 6/30	
Dutcher[2]	4/16 – 6/30	10/1 – 11/15	

[1] Scott Spring Pasture would be used in conjunction with the Horse Flat Pasture. After construction of the Horse Flat Division Fence, a two pasture rotation would be utilized between the Horse Flat and Scott Spring Pastures.

[2] The Dutcher Pasture would be used as a gathering field in the spring during the years the Pole Creek Breaks Pasture is used. Although individual livestock would stay no more than seven days, livestock could be present the entire period. During years that the Pole Creek Breaks Pasture is rested, 38 cattle would be authorized on the Dutcher Pasture from 10/01 – 11/15. Livestock numbers may vary in the Dutcher Pasture during the fall as long as AUMs are not exceeded.

Mandatory Terms and Conditions

Table C1B. Alternative C1 – Permitted Use for the Pole Creek Allotment.

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Num.	Kind			Active	Suspended	Permitted
Tommy and Barbara	401	Cattle	04/16 – 06/30	97%	973	1,570	2,599

Table C1B. Alternative C1 – Permitted Use for the Pole Creek Allotment.

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Num.	Kind			Active	Suspended	Permitted
Moore (1103499)	38	Cattle	10/01 – 11/15	97%	56		

Other Terms and Conditions

1. Line 2 on the permit reflects fall use on the Dutcher Pasture. It would be used as a gathering field in the spring during the years the Pole Creek Breaks Pasture is used. During the years the Dutcher Pasture is used in the spring as a gathering field, no additional AUMs would be authorized and livestock use would be limited to 973 Active AUMs identified on Line 1. Although individual livestock would stay no more than seven days, livestock could be present the entire period. During years that the Pole Creek Breaks Pasture is rested, 56 AUMs would be authorized on the Dutcher Pasture from 10/01 – 11/15. Livestock numbers may vary (up to 150 cattle) in the Dutcher Pasture during the fall as long as AUMs are not exceeded.
2. Livestock grazing would be in accordance with the Pole Creek Allotment Final Decision dated TBD. The grazing rotation would be as outlined in Table C1of EA #DOI-BLM-ID-B030-2009-0004-EA.
3. The permittee is expected to remove all livestock by 6/30, but would be given an additional ten days to remove any remaining stragglers (not to exceed 15 cattle) missed in the rugged terrain and juniper areas as long as AUMs are not exceeded.
4. Changes to scheduled grazing use require prior approval by the Authorized Officer.
5. Livestock turnout dates are subject to Boise District Range Readiness Criteria (see Appendix E). If turnout is delayed, livestock numbers may be increased due to a shortened season of use. Livestock numbers would not exceed 500 cattle and Active Use would not exceed 973 AUMs in the Pole Creek Breaks or Horse Flat/Berry Gulch/Scott Spring Pastures.
6. Grazing is not authorized in the Manada Flat, Little Willow Spring, Big Willow Spring, Two Spring, Scott Spring, CCC Spring, Middle Fork Owyhee River, and Horsehead Spring exclosures.
7. Properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5) annually. The completed form(s) must be submitted to BLM, Owyhee Field Office (OFO) within 15 days from the last day of authorized annual grazing use.
8. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development on public land.
9. Pursuant to 43 CFR 10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.

10. BLM will monitor the resources associated with the various management objectives to determine whether objectives are being met and/or trending in the right direction. If monitoring indicates one or more objectives in a pasture have been exceeded for two consecutive years or for two consecutive rotation cycles and livestock grazing is determined the causal factor, the BLM, in its sole discretion, may require livestock to be immediately moved between pastures and/or off of the allotment.

Interim Livestock Management During/Following Broadcast Burn Treatments

An interim grazing schedule would be implemented starting on the year of the burn and lasting for six years. The Pole Creek Breaks and Horse Flat/Berry Gulch Pastures would continue to be rested five out of ten years, but the Scott Spring Pasture and the associated 341 (973 AUMs x 0.35) AUMs would receive six out of ten years of rest. The Scott Spring Pasture is 35% of the combined acreage of the Horse Flat/Berry Gulch and Scott Spring Pastures. This would allow three full growing seasons of rest following the prescribed broadcast burn. The burn would occur on a rest year for the Horse Flat/Berry Gulch/Scott Spring Pastures. The Horse Flat/Berry Gulch Pasture would be authorized for 260 cattle from April 16 through June 30 during the year the Scott Spring Pasture is rested. Livestock grazing on the Dutcher Pasture would remain as scheduled above because no broadcast burning would occur in this pasture. The following is an example of the interim grazing schedule, but the burn may occur on a different rest year for the Horse Flat/Berry Gulch/Scott Spring Pastures.

Table C1C. Alternative C1 – Example Interim Grazing Rotation.

Pasture	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Pole Cr. Breaks	G	R	G	R	G	G	G	R/T	R	R
Horse Flat/Berry Gulch	R	G	R	G	R/T	R	R	G*	G	G
Scott Sp.	R	G	R	G	R/T	R	R	R	G	G
Total AUMs	973	1,029	973	1,029	973	973	973	688	1,029	1,029

G – Livestock grazing from 4/16 – 6/30.
R – Rest.
T – Burn Treatment in the summer/fall.
* The Horse Flat Pasture would be authorized for 260 cattle from April 16 through June 30 during the year the Scott Spring Pasture is rested.

The Horse Flat Pasture Division Fence would be constructed the first or second year after the burn treatments to provide an additional year of rest for the Scott Spring Pasture and for improved management capabilities (i.e., assist in gathering, additional pasture for rotations if deemed necessary, etc.).

Range improvement projects as described in Section 2.2.3 would be implemented.

Livestock trailing would occur in this alternative as described in Section 2.2.5.

Juniper treatments would occur in this alternative as described in Section 2.2.4.

2.4.5 Alternative C2 – Spring Use/Rest with a 40% Reduction

This alternative is similar to Alternative C1 but with reduced livestock numbers, shortened season of use, and a 40% (357 AUMs) reduction in Active Use compared to Alternative A1. Alternative C2 proposes use of up to 535 Active AUMs, which is a 48% decrease (494 AUMs) in Active AUMs compared to Alternative C1 and a 64% reduction (933 AUMs) of Active AUMs compared to Alternative A2. Approximately half of the allotment would be rested each year. This alternative was developed from scoping comments that requested for a wider range of alternatives (including significant reductions in Active AUMs) to improve resource conditions with greater consideration to topography, and to progress faster toward meeting Standards while meeting the purpose and need of this EA.

The grazing permit would be issued for a term of ten years. This alternative would allow 261 livestock to turnout on May 1 and removal on June 30 with a two-year rotation. On Year 1 livestock would graze the Pole Creek Breaks Pasture, and the Horse Flat/Berry Gulch/Scott Spring Pastures would be rested. On Year 2, the Horse Flat/Berry Gulch/Scott Spring Pastures would be grazed and the Pole Creek Breaks Pasture would be rested. This would allow rest five out of ten years for these pastures. The Dutcher Pasture would be used as a gathering field in the spring during the years the Pole Creek Breaks Pasture is used. As livestock were gathered, they would stay no more than seven days. During years that the Pole Creek Breaks Pasture is rested, 18 cattle would be authorized on the Dutcher Pasture from October 1 through November 15.

Table C2A. Alternative C2 – Grazing Rotation.

Pasture	Authorized Use Period		
	Year 1	Year 2	Year 3
Pole Creek Breaks	5/1 – 6/30	Rest	Revert to Year 1
Horse Flat/Berry Gulch	Rest	5/1 – 6/30	
Scott Spring[1]	Rest	5/1 – 6/30	
Dutcher[2]	5/1 – 6/30	10/1 – 11/15	

[1] Scott Spring Pasture would be used in conjunction with the Horse Flat Pasture. After construction of the Horse Flat Division Fence, a two pasture rotation would be utilized between the Horse Flat and Scott Spring Pastures.

[2] The Dutcher Pasture would be used as a gathering field in the spring during the years the Pole Creek Breaks Pasture is used. Although individual livestock would stay no more than seven days, livestock could be present the entire period. During years that the Pole Creek Breaks Pasture is rested, 18 cattle would be authorized on the Dutcher Pasture from 10/01 – 11/15. Livestock numbers may vary in the Dutcher Pasture during the fall as long as AUMs are not exceeded.

Mandatory Terms and Conditions

Table C2B. Alternative C2 – Permitted Use for the Pole Creek Allotment.

Operator Name (Number)	Livestock		Season of Use	Federal Land	AUMs		
	Num.	Kind			Active	Suspended	Permitted
Tommy and Barbara Moore (1103499)	261	Cattle	05/01 – 06/30	97%	509	2,064	2,599
	18	Cattle	10/01 – 11/15	97%	26		

Other Terms and Conditions

1. Line 2 on the permit reflects the Dutcher Pasture and would only be used in the spring **OR** fall for 26 AUMs. It would be used as a gathering field in the spring during the years the Pole Creek Breaks Pasture is used. Although individual livestock would stay no more than seven days, livestock could be present the entire period. During years that the Pole Creek Breaks Pasture is rested, 26 AUMs would be authorized on the Dutcher Pasture from 10/01 – 11/15. Livestock numbers may vary in the Dutcher Pasture during the fall as long as AUMs are not exceeded.
2. Livestock grazing would be in accordance with the Pole Creek Allotment Final Decision dated TBD. The grazing rotation would be as outlined in Table C2A of EA #DOI-BLM-ID-B030-2009-0004-EA.
3. Livestock removal flexibility from the allotment would be authorized allowing ten days to remove stragglers. The permittee is expected to remove all livestock by 6/30, but would be given an additional ten days to remove any remaining stragglers (not to exceed 15 cattle) missed in the rugged terrain and juniper areas as long as AUMs are not exceeded.
4. Changes to scheduled grazing use require prior approval by the Authorized Officer.
5. Livestock turnout dates are subject to Boise District Range Readiness Criteria (see Appendix E). If turnout is delayed, livestock numbers may be increased due to a shortened season of use. Livestock numbers would not exceed 350 cattle and Active Use would not exceed 509 AUMs in the Pole Creek Breaks or Horse Flat/Scott Spring Pastures.
6. Grazing is not authorized in the Manada Flat, Little Willow Spring, Big Willow Spring, Two Spring, Scott Spring, CCC Spring, Middle Fork Owyhee River, and Horsehead Spring exclosures.
7. Properly complete, sign and date an Actual Grazing Use Report Form (BLM Form 4130-5) annually. The completed form(s) must be submitted to BLM, Owyhee Field Office (OFO) within 15 days from the last day of authorized annual grazing use.
8. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
9. Pursuant to 43 CFR 10.4(b), the BLM Owyhee Field Manager must be notified by telephone with written confirmation immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), any ongoing activities connected with such discovery must be stopped immediately and a reasonable effort to protect the discovered remains or objects must be made.
10. BLM will monitor the resources associated with the various management objectives to determine whether objectives are being met and/or trending in the right direction. If monitoring indicates one or more objectives in a pasture have been exceeded for two consecutive years or for two consecutive rotation cycles and livestock grazing is determined the causal factor, the BLM, in its sole discretion, may require livestock to be immediately moved between pastures and/or off of the allotment.

Interim Livestock Management During/Following Broadcast Burn Treatments

An interim grazing schedule would be implemented starting on the year of the burn and lasting for six years. The Pole Creek Breaks and Horse Flat/Berry Gulch Pastures would continue to be rested five out of ten years, but the Scott Spring Pasture and the associated 178 (509 AUMs x 0.35) AUMs would receive six out of ten years of rest. The Scott Spring Pasture is 35% of the combined acreage of the Horse Flat/Berry Gulch and Scott Spring Pastures. This would allow three full growing seasons of rest following the prescribed broadcast burn. The burn would occur on a rest year for the Horse Flat/Scott Spring Pastures. The Horse Flat/Berry Gulch Pasture would be authorized for 170 cattle from May 1 through June 30 during the year the Scott Spring Pasture is rested. Livestock grazing on the Dutcher Pasture would remain as scheduled above because no broadcast burning would occur in this pasture. The following is an example of the interim grazing schedule, but the burn may occur on a different rest year for the Horse Flat/Berry Gulch/Scott Spring Pastures.

Table C2C. Alternative C2 – Example Interim Grazing Rotation.

Pasture	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Pole Cr. Breaks	G	R	G	R	G	G	G	R/T	R	R
Horse Flat/Berry Gulch	R	G	R	G	R/T	R	R	G*	G	G
Scott Sp.	R	G	R	G	R/T	R	R	R	G	G
Total AUMs	509	535	509	535	509	509	509	357	535	535

G – Livestock grazing from 5/1 – 6/30.
R – Rest.
T – Burn Treatment in the summer/fall.
* The Horse Flat Pasture would be authorized for 170 cattle from May 1 through June 30 during the year the Scott Spring Pasture is rested.

The Horse Flat Pasture Division Fence would be constructed the first or second year after the burn treatments to provide an additional year of rest for the Scott Spring Pasture and for improved management capabilities (ie. assist in gathering, additional pasture for rotations if deemed necessary, etc.).

Range improvement projects as described in Section 2.2.3 would be implemented.

Livestock trailing would occur in this alternative as described in Section 2.2.5.

Juniper treatments would occur in this alternative as described in Section 2.2.4.

2.4.6 Alternative D – No Grazing

No grazing would be authorized on the Pole Creek Allotment for a ten-year term and all 2,599 AUMs (1,131 presently in suspension and 1,468 Active) would be unavailable for livestock grazing on public lands. This alternative responds to scoping comments for a wider range of alternatives (including rest for the entire allotment) to improve resource conditions to progress more rapidly toward meeting Standards while meeting the purpose and need of this EA.

No construction of new range improvements would occur, but Big Willow Spring Rehabilitation and Horsehead Spring Rehabilitation would be implemented as described in Section 2.2.3.

No livestock trailing would occur in this alternative.

Juniper treatments would occur in this alternative as described in Section 2.2.4.

2.5 Comparison of Alternatives

Table Comp1. Comparison of Alternatives

Comparison by Alternative	Alternative A1		Alternative A2		Alternative B			Alternative C1		Alternative C2		Alternative D
Cattle No.	451 cattle		500 cattle		537 (up to 600) cattle			439 (up to 538) cattle		261 (up to 350) cattle		0 cattle
						Spring	Fall					
Season of Use by Pasture	PCB/ Dutcher (1A)	7/1-7/31	PCB/ Dutcher (1A)	7/1-8/15	PCB	4/15-5/23	9/23-10/31	PCB	4/16-6/30 (yr1) Rest (yr2)	PCB	5/1-6/30 (yr1) Rest (yr2)	Allotment Rested for Ten Year Term
	HF/BG (1B)	8/1-8/31	HF/BG (1B)	8/16-9/30	SS	5/24-6/4	11/1-11/12	HF/SS/BG*	Rest (yr1) 4/16-6/30 (yr2)	HF/SS/BG*	Rest (yr1) 5/1-6/30 (yr2)	
					HF/BG	6/5-6/30	11/13-12/8	Dutcher	4/16-6/30 (yr1) 10/1-11/15 (yr2)	Dutcher	5/1-6/30 (yr1) 10/1-11/15 (yr2)	
					Dutcher	4/15-6/30	9/23-12/8					
Number of Days per Pasture	PCB/ Dutcher (1A)	31	PCB/ Dutcher (1A)	46	PCB	39	39	PCB	76 (yr1) 0 (yr2)	PCB	61 (yr1) 0 (yr2)	Allotment Rested for Ten Year Term
	HF/BG (1B)	31	HF/BG (1B)	46	SS	12	12	HF/SS/BG*	0 (yr1) 76 (yr2)	HF/SS/BG*	0 (yr1) 61 (yr2)	
					HF/BG	26	26	Dutcher	76 (yr1) 46 (yr2)	Dutcher	61 (yr1) 46 (yr2)	
					Dutcher	77	77					
AUMs/Pasture	PCB/ Dutcher (1A)	446	PCB/ Dutcher (1A)	734	PCB	640	640	PCB	973 (yr1) 0 (yr2)	PCB	509 (yr1) 0 (yr2)	Allotment Rested for Ten Year Term
	HF/BG (1B)	446	HF/BG (1B)	734	SS	197	197	HF/SS/BG	0 (yr1) 973 (yr2)	HF/SS/BG	0 (yr1) 509 (yr2)	
					HF/BG	426	426	Dutcher	56 (yr1) 56 (yr2)	Dutcher	26 (yr1) 26 (yr2)	
					Dutcher	57	57					
Acres/AUM by Pasture **	PCB/ Dutcher (1A)	28	PCB/ Dutcher (1A)	15.9	PCB	17.9	17.9	PCB	12.0 (yr1) Rest (yr2)	PCB	22.9 (yr1) Rest (yr2)	Allotment Rested for Ten Year Term
	HF/BG (1B)	28	HF/BG (1B)	15.9	SS	19.0	19.0	HF/SS/BG	Rest (yr1) 11.1 (yr2)	HF/SS/BG	Rest (yr1) 21.1 (yr2)	
					HF/BG	16.5	16.5	Dutcher	17.8 (yr1) 17.8 (yr2)	Dutcher	38.2 (yr1) 38.2 (yr2)	
					Dutcher	17.4	17.4					
Proposed Active AUMs	892		1,468		1,320			1,029		535		0
Suspended AUMs	1,707		1,131		1,279			1,570		2,064		2,599
Permitted AUMs	2,599		2,599		2,599			2,599		2,599		2,599

Comparison by Alternative	Alternative A1	Alternative A2	Alternative B	Alternative C1	Alternative C2	Alternative D
% Active AUMs Compared to Alternative A1	100%	165%	148%	115%	60%	0%
% Active AUMs Compared to Alternative A2	61%	100%	90%	70%	36%	0%
Range Improvement Projects	No	No	Yes	Yes	Yes	Yes (Rehabilitation only)
Juniper Treatments	No	No	Yes	Yes	Yes	Yes
Livestock Trailing* **	Yes	Yes	Yes	Yes	Yes	No

PCB – Pole Creek Breaks Pasture, SS – Scott Spring Pasture, HF – Horse Flat Pasture, BG – Berry Gulch Pasture.

* The grazing rotation would change as described in Alternative C after the construction of the Horse Flat Division Fence.

** The stocking rate (animals per unit area) is the inverse of the acres/AUM, so a higher number of acres/AUM would equate to a lower stocking rate.

*** Trailing AUMs (50 AUMs) were not included in any AUM calculations on this table. The BLM expects little or no utilization to occur while actively trailing for two miles on a road.

3.0 Affected Environment and Environmental Consequences

3.1 Upland Vegetation/Noxious Weeds

3.1.1 Affected Environment – Upland Vegetation/Noxious Weeds

Ecological Sites
Ecological sites are a description of the expected vegetation based on soils, climate (precipitation and temperature), and a natural disturbance regime. The Pole Creek Allotment is composed of four major ecological sites (Table UV1 and Map 5). They include a loamy 13-16" precipitation mountain big sagebrush/bluebunch wheatgrass and Idaho fescue site, a very shallow stony loam low sagebrush site, a shallow claypan low sagebrush site, and steep rocky canyons. See USDA-NRCS 2005 for a more detailed description of the dominant ecological sites. See Appendix F for a list of common and scientific names of plants used in this document.

Table UV1: Ecological Sites Mapped in the Pole Creek Allotment

Ecological Site	Dominant Species Expected	Acres	Percent of Allotment
Loamy 13-16" ARTRV/PSSPS-FEID	mountain big sagebrush, bluebunch wheatgrass, Idaho fescue	12,574	51%
Very shallow stony loam 10-14" ARAR8/POSE-PSSPS	low sagebrush, Sandberg bluegrass, bluebunch wheatgrass	5,707	23%
Shallow claypan 12-16" ARAR8/FEID	low sagebrush, Idaho fescue	3,396	14%
Steep, rocky canyons	sparse	2,639	11%
Mahogany savanna 16-22" CELE3-SYOR2/FEID-ACHNA	curl-leaf mountain mahogany mountain snowberry, Idaho fescue, needlegrass	164	<1%
	Total:	24,480	100%

The ecological sites indicate that under a natural disturbance regime the Pole Creek Allotment should be dominated by sagebrush/bunchgrass communities. Other vegetation types, such as mahogany, juniper, aspen, and riparian areas, are expected to occur as unmapped inclusions within the larger ecological sites.

Current Vegetation
Current vegetation cover type (based on mapping done by the Pacific Northwest National Laboratory (PNNL) from 2000/2001 Landsat satellite imagery) in the Pole Creek Allotment is shown in Table UV2.

Table UV2: Existing Vegetation in the Pole Creek Allotment (based on PNNL data)

Vegetation Cover Type	Percent of Allotment
Juniper	44%
Mountain big sagebrush	27%
Low sagebrush	21%
Mountain mahogany	7%
Wet meadow	0.6%
Mountain shrub	0.2%
Exotic annual grasses	0.1%
Aspen	0.1%
Total:	100%

The change between expected overstory vegetation and the current vegetation is indicated by comparing the two tables. Ecological site and PNNL mapping were done at different scales so precise matching is not possible, but gross changes in plant community structure are apparent. In general, juniper is occupying a much higher proportion of the landscape than expected, while both mountain big sagebrush and low sagebrush are substantially reduced.

Vegetation cover typing maps the dominant cover, and does not indicate understory (grasses and forbs) composition. Changes in grass and forb composition are documented in the 2001 Assessment (Appendix B), trend data, and more recent observations, which indicate a reduction in tall bunchgrass, at least for the mountain big sagebrush sites and some of the low sagebrush sites. In many of the mountain big sagebrush ecological sites, juniper has largely replaced sagebrush, and bluebunch wheatgrass and Idaho fescue are present in low numbers, but replaced by needlegrass as the dominant grass in interspaces between shrubs/trees. Perennial forb abundance is lower than expected.

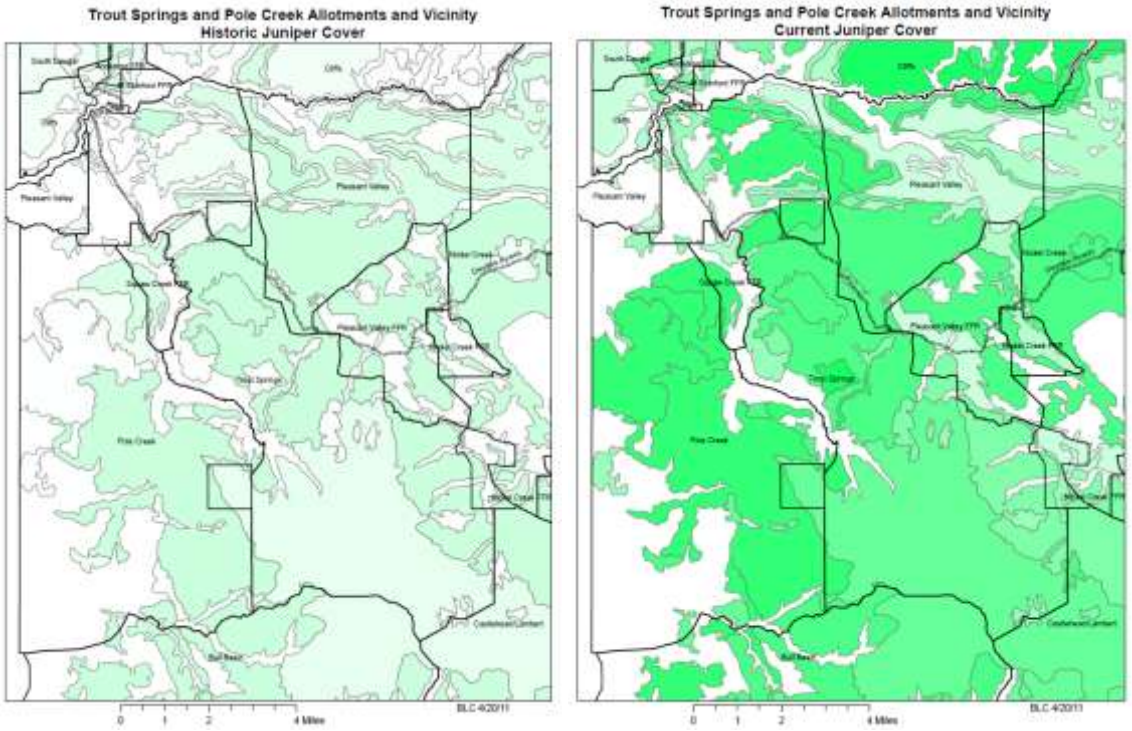
In the very shallow and shallow soil low sagebrush ecological sites, the assessment and vegetation mapping show that juniper has replaced some low sagebrush, particularly on deeper soil pockets within this ecological site. Other areas within the ecological sites more closely resemble expected conditions, with widely spaced old juniper trees, and bunchgrasses (such as Idaho fescue, bluebunch wheatgrass, squirreltail, and Sandberg bluegrass) only slightly reduced from expected levels. Bulbous bluegrass (a non-native perennial) occurs in most drainages and roadsides, and is often co-dominant with native bunchgrasses. Cheatgrass, Japanese brome, medusahead and other annual weeds are scattered throughout the allotment, generally in localized disturbed areas but seldom dominant.

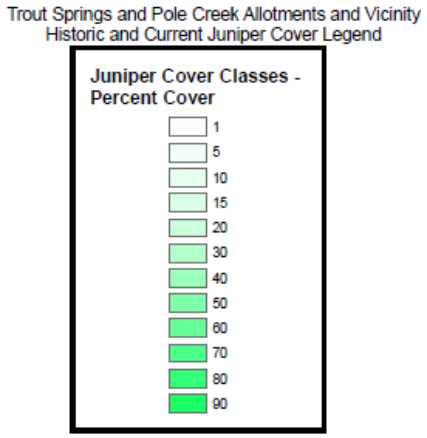
Old growth junipers occur as unmapped inclusions in shallow soils, rocks and other fire resistant areas within the larger ecological sites. Accordingly, old growth juniper is most prevalent in the southwest portion of the allotment within steep rocky canyons and the very shallow stony loam ecological sites, but it is also scattered in various amounts throughout the rest of the allotment. All of the ecological sites in the Pole Creek Allotment have been affected by juniper encroachment, but particularly the loamy mountain big sagebrush sites; see Map 5. Under a natural disturbance regime we would expect a diverse shrub and grass-dominated landscape, with juniper limited to primarily old growth individuals and small stands on rocky areas and other fire refugia (Tirmenstein 1999). This is in marked contrast with the current condition of

juniper dominating much of the allotment. A GIS analysis comparing historic juniper cover (the potential under a natural disturbance regime) to current conditions estimated a change from 8% historic cover by juniper to currently 45% within the Pole Creek Allotment, an increase of over five-fold over a period of approximately 150 years, mostly in the loamy ecological sites (Major, in review) (see Figure UV1). Much of the current cover in the Pole Creek Allotment and Juniper Mountain vicinity as a whole consists of young, post-settlement (seral) juniper. Miller et al. (2008) characterized the pre-settlement juniper in the Juniper Mountain area as widely scattered individuals or small stands of trees rarely exceeding a hectare, and estimated that old growth juniper makes up 5-10 percent of the current population. They suggest this indicates a past fire regime of frequent, low intensity fires (ibid).

Figure UV1: Juniper Cover Change

The following figures show a substantial increase in western juniper cover over the past 150 years. The historic juniper cover map indicates areas where old growth juniper trees would be expected (plus the unmapped polygons), but the distribution of old growth within those polygons would be patchy (particularly on rock outcrops) rather than evenly distributed. No polygons in the historic juniper cover map exceed 20% cover.





Note: Not all polygons are included, such as rocky canyons and some shallow and very shallow claypans, which would also include both historic and current juniper cover at low levels. Cover classes are percent canopy cover. GIS data is from Major, in review. Current conditions do not include juniper cover changes since the 2007 Crutcher Fire (Tongue Fire Complex), which did not reach the Pole Creek Allotment.

Juniper density increase in the general Juniper Mountain area is illustrated in a series of repeated photographic points between 1963 and 2009. Malcom Furniss of the University of Idaho, documenting a 1962 looper worm infestation of mountain mahogany, took several landscape photographs, mostly in the adjacent Trout Springs Allotment (Furniss 1985). Photographs taken from the same locations in 1963, 1985, and 2009 illustrate juniper expansion on a local and landscape scale (see Figure UV2 and Appendix G).

Figure UV2: 1963 and 2009 Photos from Bedstead Ridge Road – Notice the increase in juniper cover and the related decrease in mountain mahogany, sagebrush, and other understory vegetation.

Aspen currently occurs in generally small, scattered stands along the drainages and other moist areas within the allotment. Much of the aspen is in poor condition due to juniper shading and competition. Aspen sprouts are relatively few, and in at least some locations are being browsed by wildlife and livestock.

Mountain mahogany exists as scattered small stands throughout the upper parts of the Pole Creek Allotment, although only a small part of the allotment is mapped within a mahogany savanna ecological site. Much of the mahogany is being shaded out by juniper, and may have been affected by the looper worm infestation on Juniper Mountain in 1962 (Furniss 1985) and/or by browsing. Other shrubs that provide browse for wildlife, such as bitterbrush and ceanothus, are widely scattered (Assessment, Appendix B), and have also likely been reduced by juniper competition and perhaps historic cattle use.

Trend Data

Trend studies have been established at five sites within the Pole Creek Allotment, and were measured four times between 1997 and 2009. An additional three sites were established in 2009, with one reading. All trend sites are located within the very shallow stony loam 10-14" low sagebrush/Sandberg bluegrass-bluebunch wheatgrass or the shallow claypan 12-16" low sagebrush/Idaho fescue ecological site. Data from the 2005 and 2009 re-readings are used to update conditions since the 2001 Assessment. See Appendix H for specifics. Data from these sites are generally inconclusive. Idaho fescue, the most common of the deep-rooted perennial

grasses, showed a statistically significant (p-value <0.1) decrease between 2005 and 2009 at three of the five monitoring sites and no significant change at the other two sites; changes between 2000 and 2005 were more ambiguous, with two sites increasing, one site decreasing, and two sites statistically unchanged in Idaho fescue frequency. Bluebunch wheatgrass was rarely recorded at four of five monitoring sites, but at the one site where it occurred frequently enough to be analyzed, it declined significantly between 2000 and 2005, with no significant change between 2005 and 2009. This suggests that deep-rooted perennial bunchgrasses are not increasing, and may in fact be decreasing. Based on the trend photographs, four of five sites have similar perennial plant vigor in 2000, 2005, and 2009, but one site appeared to have highly reduced perennial grass vigor in 2005 and 2009 compared to 2000.

Sandberg bluegrass (and data probably include bulbous bluegrass in at least some cases) appears to be mostly stable, with a significant increase in frequency at one site and no significant change at the other four sites between 2005 and 2009. Between 2000 and 2005, one site increased bluegrass frequency and one site decreased; the other sites were statistically unchanged. This suggests that early-maturing, shallow-rooted perennial grasses have probably not been negatively affected by recent grazing management. Recent observations suggest that bulbous bluegrass is widespread within the allotment, but does not appear denser in previously cut juniper areas than untreated areas. Perennial forb frequency shows no clear trend, in either the most recent sampling or across the sampling years.

Sagebrush frequency and density data show mixed results. At two of five sites, low sagebrush frequency increased significantly between 2005 and 2009 and was not significantly changed at the other three sites, while from 2000 to 2005, at one site low sagebrush frequency increased and at another site it decreased; other changes in 2005 were not significant. Data from the same sites show a general reduction in low sagebrush density (not tested for significance) at four of five sites each sampled year from 1997 to 2009. Thus consistent trends in low sagebrush are not apparent at these sites. The broad-scale vegetation mapping is probably more useful than site-specific trend plots in characterizing long-term replacement of sagebrush by juniper across the allotment.

Ground cover comparisons between 2000 and 2009 showed a reduction in perennial basal vegetation at all five sites, and an increase in woody plant canopy cover at three of five sites with no significant changes at the other two sites (Appendix H). This suggests that there has not been an improvement in herbaceous vegetative cover. Bare ground was mostly stable between those years, but non-persistent litter increased significantly, while more durable soil cover elements decreased at three of five sites. Thus, other soil cover parameters are more ambiguous than live vegetative cover, but from a watershed perspective are probably more or less stable between 2000 and 2009.

Trend data do not show definitive improvements in vegetation after the reduction in use which began in 2008. Although management changed significantly in 2008 (and continuing to 2011), there probably was not enough time between the management change and trend plot readings (2009) to reflect improvements in upland vegetation that would be expected from the reduction in actual use and upland utilization. Also, high juniper density continues to affect the plant

community, along with bulbous bluegrass and other weeds in localized areas. Thus, the current assessment uses qualitative observations, along with use and utilization figures, to evaluate current conditions.

Density Plots

In addition to the nested frequency trend monitoring sites, 35 plots in the Pole Creek and Trout Springs Allotments were measured in fall 2009 to determine juniper, mountain mahogany, shrub, and perennial grass density across the Juniper Mountain area. Data from these plots indicate that juniper averages 257 young trees per acre (<6" diameter at root collar) and 144 mature trees per acre (Figure UV3). Old growth junipers were few, averaging 5 trees per acre on sampled plots. Mountain mahogany averaged about 75 live plants per acre, with a fairly even proportion of young (<6' tall) and mature individuals. Aspen averaged 23 young (<4" diameter at breast height) and 5 mature trees per acre. Both aspen and mahogany showed a patchy distribution (indicated by high variance between plots). Shrubs density averaged 2.9 plants/m² (11,736 plants/acre) (Table UV3). Shrub species were primarily mountain big sagebrush, followed in lesser amounts by Oregon grape, rabbitbrush, ceanothus, snowberry, and incidental amounts of wild rose, bitter cherry, currant, and serviceberry. Deep-rooted perennial grasses (such as bluebunch wheatgrass, Idaho fescue, needlegrass) averaged 8.7 plants/m² (35,209 plants/acre). This indicates that an adequate understory exists to respond once juniper is treated (Miller et al. 2005). Cheatgrass was recorded in subplots within only 4 of the 35 macroplots (11%); no medusahead was found in these plots. Bulbous bluegrass was recorded in 57% of the macroplots; however, its density seldom (9% of macroplots) exceeded that of the native perennial grasses.

Figure UV3. Tree density in the Juniper Mountain area.

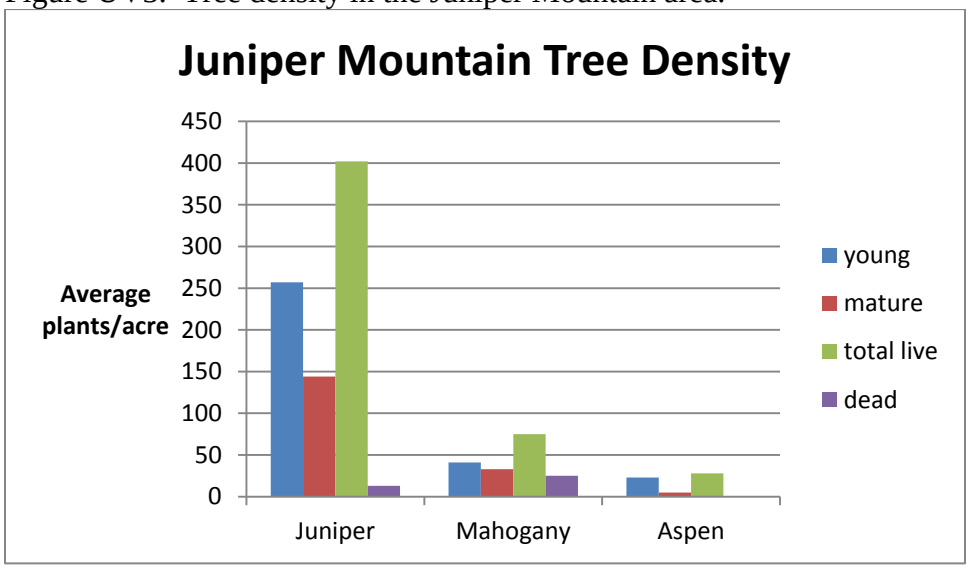


Table UV3. Grass and Shrub Density (sampled in 10 1-m² subplots within thirty-five macroplots)

Plant Group	Average Plants/m²	Range of macroplot averages (averaging 10 subplots within a	Standard Deviation between macroplots

		macroplot)	
Deep-rooted perennial grass	8.71	2.4 – 16.5	3.85
Shrubs (all species)	2.87	0 – 15	3.26

Rangeland Health Standard 4

A rangeland health assessment was compiled in 2001 (Appendix B) and is updated in this section of the EA. An evaluation of Standards and determination were completed in 2012; Standard 4 (Native Plant Communities) is not being met. Indications of the Standard not being met are the widespread replacement of mountain big sagebrush and localized replacement of low sagebrush by juniper, and a reduction in large, native perennial bunchgrasses. Ground cover data show less basal vegetation, biotic soil crusts, and other stable ground cover elements than expected.

The significant causal factors for not meeting the Standard are juniper encroachment (covering 45% of the allotment compared to 8% expected under a natural disturbance regime) and past (pre-2008) grazing management (moderate or higher intensity, season of use during the critical growing season for loamy sites, and no rest). Invasive grasses, such as bulbous bluegrass and annual bromes, affect native plant communities in localized areas within the allotment, but are not driving ecological processes at the landscape scale because of their patchy distribution and/or relatively low density, so are not considered significant factors. Although higher elevation, loamy sites are grazed in part during the growing season, current grazing management (2008-2011) results in slight to light upland grass utilization and a shorter grazing period, so it does not have a substantial effect on the native plant communities. Therefore, current grazing conforms with Idaho Guidelines for Livestock Grazing Management applicable to Standard 4.

Utilization

Utilization records for the Pole Creek Allotment are incomplete, but data for nine of the last 23 years are available. See Appendix A. Records for the five available years between 1988 and 2000 show an average of 43% utilization in Pasture 1A and an average of 46% utilization in Pasture 1B. These figures were averages of readings from two to seven locations per year, ranging from 9-89% at each location, so variability was quite high. Averaging records from 2008 to 2011 shows 15% utilization in Pasture 1A and 18% utilization in Pasture 1B for those four years. Individual site readings range from 4-32% for those years.

The correlation between reported actual use (AUMs per pasture per year) and utilization in a given year appears rather limited (Appendix A). Averaged across years, actual use for the same years between 1988 and 1995 was 683 AUMs (range 610-843) for Pasture 1A and 541 AUMs (range 355-680) for Pasture 1B, while in 2008-2011 it was 448 AUMs (range 352-623) and 444 AUMs (range 352-502) for Pastures 1A and 1B respectively. So on average, lower actual use resulted in lower forage utilization levels, as expected. Annual precipitation also affects utilization, tending to increase forage production during wetter years, and generally, affecting the degree of livestock utilization (i.e. with actual use constant, percent utilization tends to be lower during better precipitation years).

Overall, this indicates that average upland use was under the 50% utilization specified in the objectives for pastures with deferred use, and in recent years with the stipulated agreement in effect, upland use has been light.

Juniper Expansion Background

The expansion of western juniper throughout this area is well documented by Burkhardt and Tisdale (1969), Miller et al. (2005), and Bunting et al. (2007). Prior to Euroamerican settlement some 140 years ago, juniper was largely restricted to rocky, sparsely vegetated sites that burned infrequently. A lack of fine fuels associated with these sparsely vegetated sites resulted in infrequent fires, thereby making juniper the climax species there. Conversely, an abundance of fine fuels on the adjacent productive loamy sites (characterized by shrub steppe and aspen communities) resulted in frequent fires which killed young juniper trees as they tried to expand outside of the rocky fire safe areas. The mean fire intervals in the mountain big sagebrush/Idaho fescue communities are believed to have been approximately 10-25 years with large fires every 38 years (Miller et al. 2005). Baker (2008) estimates the historic fire rotation to be 150-300 years in mountain big sagebrush communities, but his estimates lump fire intervals from large regional scale categories and are inconsistent with research conducted in the Owyhee Uplands (Burkhardt and Tisdale 1969, Miller et al. 2005, and Bunting et al. 2007).

With the advent of Euroamerican settlement, fire suppression, reduction of fine fuels by historic livestock grazing, and elimination of burning by Native Americans, the historic fire regime was disrupted throughout the Owyhee Uplands, allowing juniper to expand beyond its historic fire-safe sites into the shrub steppe, and aspen communities. As a result, juniper continues to expand beyond its historic range, replacing the shrub steppe and aspen communities which provide important habitat for a variety of wildlife species.

Studies by Bunting et al. (2007) in the Owyhee Uplands estimate that juniper has been expanding at a rate of approximately 5% per decade. Miller et al. (2008) sampled the ages of 4,332 junipers along an 8 to 15 mile transect, which extended from the lower to upper boundaries of the juniper woodland across the Juniper Mountain area. Their research indicated that 90% of all junipers in this area had become established within the last 140 years.

As juniper increasingly dominates a site, shrubs begin to decrease, diminishing the structural complexity of the plant community and habitat for ground and shrub-nesting birds, mule deer, and other wildlife. Seed pools decline, and the reduction of fine fuels (shrubs and grasses) makes the site increasingly difficult to burn under normal conditions. Eventually, these communities transition into non-diverse, simplified juniper monocultures (Miller et al. 2005). The concerns of wildlife habitat loss resulting from juniper expansion and recommendations to control this expansion are articulated in the 2006 Idaho Sage-grouse Conservation Plan, 2004 Owyhee County Sage-grouse LWG Plan, 2004 North American Mule Deer Conservation Plan, and 2005 Coordinated Implementation Plan for Bird Conservation in Idaho (as discussed in 1.5.7 and 1.5.8) .

The stages of juniper expansion into the shrub steppe communities are categorized by Miller et al. (2005) into three transitional phases:

- Phase 1 (early seral) - juniper is present; shrubs and herbaceous plants dominate the site and are the dominant vegetation that influences ecological processes (hydrologic, nutrient, and energy cycles).
- Phase 2 (mid seral) - juniper is co-dominant with shrubs and herbaceous plants and all three vegetation layers influence ecological processes on the site. The site can still be returned to a shrub steppe community with fire alone.
- Phase 3 (late seral) - juniper is the dominant vegetation and primary plant layer driving the ecological processes on the site. This stage usually lacks the fine fuels (continuous understory) needed to carry a fire except under extreme conditions. Consequently, pre-burn cutting is required to recreate fuel continuity that would allow a prescribed fire to burn and carry through Phase 3 juniper stands under more moderate conditions.

A University of Idaho analysis of the juniper transitional phases indicates that 42% of the Pole Creek Allotment consists of Phase 3; 44%, Phase 2; and only 14%, Phase 1 (Roth 2004). See Map 7. These data indicate that throughout much of the allotment, juniper has expanded to the point that fire no longer plays a natural role, except in unusual large stand-replacing fires, such as the 2007 Crutcher Fire. Accordingly, to re-establish a natural fire regime, improve rangeland health, and restore the declining shrub steppe and aspen communities in the Pole Creek Allotment, pre-burn cutting is required to build a consistent fuel bed that would carry prescribed fire under moderate conditions.

Juniper expansion and grazing practices have reduced habitat diversity by replacing the sagebrush/grass/juniper mosaic with a more simplified juniper woodland in many areas, affecting wildlife and plant biodiversity. Juniper expansion and past grazing practices have also resulted in reduced amounts of available livestock forage across the Pole Creek Allotment. Miller et al. (2000) documented that an increase in juniper biomass reduces the herbaceous component, likely decreasing the carrying capacity of the allotment.

Disturbance History and Fire Regime Condition Class

BLM records show little fire history in the Pole Creek Allotment. A 75-acre fire in 1980, half of a 57-acre fire in 1986, and a 20-acre fire in 1986 were the only sizable wildfires recorded; another six fires less than an acre were also recorded between 1966 and 2009. Even fewer prescribed fires are in the record: a prescribed fire area mapped as 1,314 planned acres is recorded as having only 10 acres burned in 1982. This indicates that a very small percentage of the approximately 23,400-acre allotment has burned in recent decades, and corresponds with observations and current mapping of widespread juniper encroachment into sagebrush ecological sites.

The Manada Flat Juniper Cutting Area is about 260 acres north of Scott Springs. Most of the junipers $\geq$ 3 feet tall in a portion of this area were commercially felled in 1994, and subsequently made available for firewood. A quarter-section (160-acre) block within the cutting area was apparently chained some years previous to 1994. Elsewhere in the Pole Creek Allotment, limited scattered cutting of individual junipers for firewood or fence posts has occurred

throughout the allotment over the years, having little effect on the density or age class distribution of juniper.

A fire regime condition class (FRCC) assessment was conducted for the 288,000-acre Juniper Mountain Strategy Area (Heide and Corbin 2009), which incorporates the allotment. FRCC is an indication of the departure from the natural fire regime (role of fire on the landscape), based on evaluation of fire frequency, fire severity, and the proportion of seral/successional stages across a landscape. The Juniper Mountain FRCC assessment found that the Wyoming and low sagebrush component is in FRCC 2, indicating moderate departure from the natural fire regime, while the mountain big sagebrush and mountain mahogany components are FRCC 3, indicating high departure from the natural fire regime. This departure is caused primarily by a reduction in the current fire frequency (as indicated by the number of acres burned over the period of record), and is also illustrated by departure in seral stage diversity, due largely to the overabundance of dense juniper stands in each of the major vegetation types.

The Crutcher Fire of 2007, which burned near but not within the Pole Creek Allotment, indicates what post-burn recovery can be expected. Monitoring for three years following the Crutcher Fire found good recovery of native vegetation, with herbaceous canopy cover of 76% post-burn compared to 30% canopy cover in unburned control plots in mountain big sagebrush areas heavily encroached by juniper, although most of this increase was native annuals rather than perennial grasses (USDI-BLM 2010). Low sagebrush areas with scattered juniper increased herbaceous cover from 50% (unburned) to 72% post-burn after three years, with an increase in perennial grass canopy cover from 39% (unburned) to 53% post-burn (USDI-BLM 2010). This indicates that, even in areas mapped as Phase 3 juniper and with the severe fire effects of a wildfire, these areas are not beyond the recovery threshold once juniper is removed.

Weeds

Few noxious weeds have been mapped in the Pole Creek Allotment: about 12 small infestations of leafy spurge and one small infestation of whitetop. Additional unmapped whitetop and other lower priority noxious weeds (such as Canada thistle) may also occur in the allotment. Most of the leafy spurge infestations have been treated, and are monitored and treated on a regular basis. Other invasive (but not noxious) non-native plants present include bulbous bluegrass, which is frequent in most drainages and roadsides, and is often co-dominant with native bunchgrasses. Cheatgrass, Japanese brome, medusahead and other annual weeds are scattered throughout the allotment, generally in localized disturbed areas but seldom dominant. A few areas have been seeded in the past with persistent, non-native perennial grasses such as crested wheatgrass, smooth brome, or intermediate wheatgrass. In general, the plant communities in the Pole Creek Allotment are dominated by native species, with little influence of non-natives other than bulbous bluegrass.

Biological Soil Crusts

Biotic soil crusts are present, but not extensive in the Pole Creek Allotment. On the loamy sites, microbiotic crusts are largely absent (Assessment 2001, Appendix B), although areas of soil moss occur, often associated with old growth juniper pockets. In the shallow and very shallow soil sites, soil lichens are minimally present, often adjacent to rock outcrops. In 2000,

microbiotic crust in basal ground cover sampling was 2-5% at the shallow and very shallow soil ecological sites measured; microbiotic crusts were measured at 0.25-3% in 2009 at the same sites (Appendix H). The lack of biotic soil crusts likely reflects past livestock trampling effects, although no recent improvement is apparent. Biological soil crust are important for increasing soil stability and capturing nutrients, and can affect vascular plant species composition (Rosentreter et al. 2007; Wicklow-Howard et al. 2003).

3.1.2 Environmental Consequences – Upland Vegetation/Noxious Weeds

3.1.2.1 Alternative A1

Alternative A1, continuation of the current situation, would not meet or make significant progress toward meeting Standard 4. Guidelines for livestock grazing management would be met, but progress towards meeting Standard 4 would be hindered due to continued competition of juniper with shrubs and grasses. The season of use and light utilization on upland grass species would allow for continued vigor and provide an opportunity for improvements in species diversity and plant community integrity in the short term (3-10 years). However, widespread replacement of mountain big sagebrush and localized replacement of low sagebrush by juniper limits the potential for improvement. Without treatments under Alternative A, juniper expansion would continue. As a result, Standard 4 would not be expected to make progress in the short (3-10 years) or long term (20-40 years) due to direct and indirect effects of continued juniper encroachment.

Effects from grazing management:
Grazing effects on upland vegetation include selective removal of preferred (more palatable) species, such as large, native bunchgrasses like bluebunch wheatgrass and Idaho fescue, can reduce reproduction (seed production) and vigor of these plants. Bunchgrasses are most sensitive to grazing during the critical growing period, when plants are actively photosynthesizing, storing carbohydrates, and developing seed, which is typically from April to mid-July. The level of grazing effects depends on the intensity (total AUMs used), season of use, and duration on a pasture. The determination identified past (pre-2008) but not current grazing as a significant causal factor for not meeting Standard 4. Alternative A1 is expected to result in light utilization (less than 27%, as seen between 2008 and 2011) in the uplands, and most of the use would occur after the critical growing period, particularly for lower elevation sites. Duration on each pasture would be relatively short. Therefore, only minor effects from grazing management would be expected, and bunchgrasses would be expected to improve in the short term (3-10 years) and long term (>20 years). However, ongoing juniper encroachment will continue to affect the upland plant communities, along with localized invasive grass impacts, and preclude making significant progress toward meeting Standard 4.

Direct effects of grazing also include browsing of woody species such as aspen, mountain mahogany, willow, bitterbrush, and serviceberry. These shrubs' sprouts are more likely to be browsed late in the season as grass and forbs dry up, and an extended season of use can have substantial impacts (Gucker 2006). However, because of limited fall use (before September 30) and light stocking rate under this alternative, no more than light browse utilization is expected,

and these shrubs should improve slightly in the short term (3-10 years). The shrub component would likely decrease in the long term (20-40 years) because of juniper expansion.

Grazing at the light use levels under Alternative A1 would not have much influence on the trend of juniper dominance and alteration of the fire regime. Most effects that convert the fire regime from a more frequent, less severe regime (which would have regularly eliminated most juniper seedlings), to a less frequent and more severe regime are caused by fire suppression, loss of understory due to juniper dominance, and climate factors. A reduction in fire, reduced perennial grasses, and increased shrub density due to historic (decades ago) grazing has also likely increased juniper regeneration by providing increased sites for juniper seedling establishment (Miller et al. 2005).

Trampling of vegetation is a direct effect of grazing. Brittle species, such as shrub seedlings (including mountain mahogany) and some forbs, are most vulnerable to trampling effects; grass seedling establishment is also affected. Trampling also affects biotic soil crusts, displacing soil lichen, moss, and bacteria assemblages. Trampling effects on soil crusts are most severe when sandy soils are dry or clay soils are wet (Belnap et al. 2001). Trampling effects are closely tied to the number of animals, duration, and stocking rate within an area. Because AUMs and stocking rates are low in this alternative, overall trampling effects are expected to be negligible on average across the uplands. However, trampling would occur in upland areas adjacent to streams, due to concentrated livestock use in these areas during the hot season.

Maintenance of existing range improvement structures would have little effects on vegetation, such as minor clearing along fencelines.

Another direct effect of grazing under current levels in Alternative A1 is the continued risk of bringing in noxious weed seed from outside the allotment, and spreading seed from existing infestations within the allotment. Cattle may spread weed seed by ingesting and depositing seed in manure and carry seed in their fur and in mud on hooves (Miller and Narayanan 2008). This alternative is likely to have a higher potential to bring in noxious weed seeds from outside the allotment than Alternatives C1, C2, and D, but lower potential than Alternatives A2 and B, because of livestock numbers. Additionally, some weed seeds would probably be matured and could be carried in with the animals by July (this alternative), whereas hay (fed prior to coming on the allotment) would be the main weed seed source with an earlier turnout date.

Indirect effects from grazing include a potential for weed increase (both noxious species and other invasive plants). These species (such as leafy spurge and cheatgrass) are able to colonize more readily when bare ground increases and perennial grass cover is reduced. Alien weeds may be more resilient to grazing than natives (Kimball and Schiffman 2003). Although non-natives do not currently dominate substantial areas within the Pole Creek Allotment, effects of continued light grazing (and even with no grazing) and juniper expansion may convert larger areas to non-natives. Bulbous bluegrass in particular is likely to continue to increase; it is grazed earlier in the season because it matures and becomes rather unpalatable earlier than native bunchgrasses. Increased bare ground and reduced perennial bunchgrass also present a potential for invasion of noxious weeds, such as knapweeds, which would have substantial negative

effects on native plant community integrity and ecosystem function (Dukes 2002). Medusahead, currently comprising less than one acre of the allotment, may also increase in the lower elevation, clay soil areas. However, the light utilization in this alternative is expected to lead to higher perennial grass cover and reduced bare ground, so little increase in weeds is anticipated.

Effects from livestock trailing/crossing would include minor trampling and negligible utilization. Because trailing would occur along an existing road with ongoing motorized vehicle travel which may disperse weeds, any additional weed spread as a result of livestock trailing is expected to be negligible. If weeds are detected along the trailing route in the future, easy access would be available for treatment. Livestock would be required to trail within 100 yards from the center line of the road and would only last approximately 3-5 hours. Range readiness would be required and would minimize effects of trampling plants and soils.

Effects of no juniper treatments:
No juniper treatments are proposed in this alternative; therefore, juniper expansion would continue at the current rate, as shown in the pictures of Appendix G, particularly throughout Pastures 1A and 1B, and on the deeper soil areas where shrubs have already been lost due to juniper encroachment. As juniper density and cover continue to increase, desirable understory vegetation would continue to decline and eventually be lost. Indirect effects from current juniper expansion are primarily a continuing shift in species composition and reduction in species diversity. Sagebrush, the cornerstone species in the mountain big sagebrush and low sagebrush ecological sites that should make up the majority of this allotment, could virtually disappear. When understory vegetation is absent or highly reduced, the ecosystem's resiliency is lost, and at that point, a disturbance (such as wildfire) that removes juniper would result in open, barren areas highly susceptible to invasion by cheatgrass and other undesirable species (Miller and Narayanan 2008). Aspen and mahogany, in particular, are at risk, since regeneration (aspen sprouts and mahogany seedlings) is limited by juniper shading and competition, and the few young plants are subject to browse by wildlife and cattle (Howard 1996).

3.1.2.2 Alternative A2

Alternative A2, livestock grazing at the 1997 grazing permit use levels, would not meet or make significant progress toward meeting Standard 4 and applicable guidelines. Livestock grazing management at Alternative A2 levels would result in no improvements to plant composition, diversity, or vigor due to grazing during the critical growing season in the higher elevations every year with higher utilization levels compared to Alternative A1. Grazing effects would be exasperated by the lack of juniper treatments to address juniper expansion. The lower elevation sites are expected to meet all applicable guidelines because livestock use would occur primarily after the growing season. Alternative A2 would not make significant progress toward meeting Standard 4 in the short (3-10 years) or long term (20-40 years) due to direct and indirect effects of continued juniper encroachment.

Effects from grazing management:
Livestock management in this alternative would likely maintain similar conditions that existed prior to the 2008 Settlement Agreement and similar to the description in the 2001 Determination. Standard 4 would likely not be met at higher elevations, but significant progress would be made

on the lower elevation sites because livestock use would occur primarily after the critical growing season. Use would occur during the active growing season every year for the first few weeks after turnout in higher elevation areas and no rest or deferment would be provided to plants; therefore, little or no improvement to higher elevation native plant communities would occur. Indirect effects from current grazing management are primarily a continuation of current species composition, lack of deep-rooted perennials, and potential reductions in species diversity and herbaceous biomass.

Livestock would be expected to concentrate on the riparian areas (see Section 3.4.2.2) as in Alternative A1, but upland utilization (expected to be approximately 50%) would be higher than Alternative A1 because of increased livestock numbers and AUMs. With higher utilization, upland vegetative conditions would not be expected to improve and would be similar to the conditions documented in the 2001 Determination (see Appendix B).

Conditions in the lower elevation sites, where livestock use would continue to occur primarily after the growing season, are expected to remain in good condition, as described in the 2001 Assessment. Plant frequency would be expected to continue at current levels in the short term (3-10 years), but would decrease in the long term (20-40 years) due to continued encroachment of juniper.

Direct effects of grazing also include browsing of woody species such as aspen, mountain mahogany, willow, bitterbrush, and serviceberry. These shrubs' sprouts are more likely to be browsed late in the season as grass and forbs dry up, and an extended season of use can have substantial impacts (Gucker 2006). However, because of limited fall use under Alternative A2 (before September 30), no more than moderate browse utilization is expected, and these shrubs would likely remain the same in the short term (3-10 years). The shrub component would likely decrease in the long term (20-40 years) because of juniper expansion.

Grazing at the use levels in this alternative (1,468 AUMs) is likely to continue the trend of juniper dominance by altering the fire regime. Fine fuel reduction due to grazing (at upper elevation sites), along with fire suppression, loss of understory due to juniper dominance, and climate factors, converts the fire regime from a more frequent, less severe regime (which would have regularly eliminated most juniper seedlings), to a less frequent and more severe regime. A reduction in fire, reduced perennial grasses (at upper elevation sites), and increased shrub density due to grazing has also likely increased juniper regeneration by providing increased sites for juniper seedling establishment (Miller et al. 2005).

Trampling of vegetation is a direct effect of grazing. Brittle species, such as shrub seedlings (including mountain mahogany) and some forbs, are most vulnerable to trampling effects; grass seedling establishment is also affected. Trampling also affects biotic soil crusts, displacing soil lichen, moss, and bacteria assemblages. Trampling effects on soil crusts are most severe when sandy soils are dry or clay soils are wet (Belnap et al. 2001). Trampling effects are closely tied to the number of animals, duration, and stocking rate within an area. Because AUMs are the highest in this alternative, overall trampling effects are expected to be the highest. At this level

of trampling and other effects, low biotic soil crust cover (<3%) and low bunchgrass frequency are expected to continue (see Appendix H).

Maintenance of existing range improvement structures would have little effects on vegetation, such as minor clearing along fencelines.

Another direct effect of grazing under Alternative A2 is the continued risk of bringing in noxious weed seed from outside the allotment, and spreading seed from existing infestations within the allotment. Cattle may spread weed seed by ingesting and depositing seed in manure and carry seed in their fur and in mud on hooves (Miller and Narayanan 2008). This alternative is likely to have among the highest potential to bring in noxious weed seeds from outside the allotment based on livestock numbers, season of use, and the highest Active AUMs.

Indirect effects from grazing include a potential for weed increase (both noxious species and other invasive plants). These species (such as leafy spurge and cheatgrass) are able to colonize more readily when bare ground increases and perennial grass cover is reduced. Alien weeds may be more resilient to grazing than natives (Kimball and Schiffman 2003). Because bare ground is expected to increase at the higher elevation sites under Alternative A2, non-natives are likely to continue to increase under this alternative. Bulbous bluegrass, a historically seeded species, in particular is likely to continue to increase. This increase in bare ground also presents a potential for invasion of noxious weeds, such as knapweeds, which would have substantial negative effects on native plant community integrity and ecosystem function (Dukes 2002). Medusahead, currently comprising less than one acre of the allotment, may also increase in the lower elevation, clay soil areas.

Effects of livestock trailing/crossing would be the same as Alternative A1.

Effects of no juniper treatments:
Effects of no juniper treatments would be the same as Alternative A1.

3.1.2.3 Alternative B

Alternative B, the adaptive management alternative, would improve native plant communities make significant progress toward meeting Standard 4 and all applicable Guidelines in the short (<10 years) and long term (>10 years). Spring season of use, utilization restrictions, and the flexibility of adaptive management would improve livestock distribution and utilization. Juniper treatments would be implemented to address juniper encroachment and was identified as necessary to make significant progress toward meeting Standard 4.

Effects from grazing management:
Alternative B would implement a utilization restriction of 30% if used in the spring which would ensure sufficient above-ground biomass to photosynthesize and continue root growth (Dietz 2006). Additionally, if grazed in the fall, a 50% utilization restriction would be implemented. The change in season of use from summer to spring or fall would improve distribution throughout the allotment, especially in the spring due to increased water availability and more palatable/nutritious forage on the uplands (Clary and Webster 1989); this would move livestock

from riparian areas to uplands. Cooler temperatures in the spring and fall would result in livestock more dispersed throughout the uplands compared to the hot summer months. Currently, livestock concentrate use in and around the riparian areas, which are shaded and provide ready access to water, which would be the case under Alternatives A1 and A2. If utilization is reduced in the riparian areas, it is expected that the utilization would increase in the uplands.

Implementation of the AIC would ensure that resources are monitored regularly and criteria are in place to determine the effectiveness of the livestock management. If criteria were exceeded, the "Tool Box" would be implemented and the BLM would require livestock grazing practices to be changed to ensure significant progress toward Standard 4 and all applicable guidelines. Indirect effects from Alternative B grazing management is an increase in species composition and potential increase in species diversity, as less grazing pressure would result in an increase in more palatable species and a decrease of less palatable species. Adaptive management in Alternative B also allows either spring or fall use during the grazing season.

Trampling effects to vegetation would be similar to Alternative A2, but slightly less due to a lower stocking rate and shorter season of use.

Effects from range improvement projects (fence construction/exclosure expansions and pipeline reconstruction) would occur as small, localized disturbances which would remove vegetation in the short term (1-5 years); only a very small fraction (<1%) of the vegetation in the allotment would be affected. In the long term, these projects would indirectly improve vegetation throughout the allotment by improving the livestock management. Pasture division fences, gap fences, cattleguards, and exclosure expansion fences would prevent unauthorized livestock access and better distribute livestock. These projects would provide for shorter pasture use duration in the Scott Spring and Horse Flat Pastures resulting in a decreased possibility of livestock regrazing plants. Rehabilitation at Big Willow and Horsehead springs would cause short-term (1-5 years) soil and vegetation disturbance on a very small portion of the allotment (<1 acre), but long-term (>5 years) improved vegetation conditions due to more natural contouring and drainage.

Effects of livestock trailing/crossing would be the same as Alternative A1.

Spring

This alternative has an early season of use, so critical growing season effects would be higher than Alternative A1, although upland utilization would be limited to no more than 30% at the time of livestock removal. Plants are more vulnerable to grazing while they are growing most quickly early in the season (even after range readiness criteria are met) than they are later in the summer and fall. Spring grazing during the critical growing season can impede native bunchgrass vigor and the ability to reproduce, because active meristem (growing point) removal reduces the amount of photosynthetic tissue available for root and seed production (Smith 1998, Brewer et al. 2007). However, because upland utilization levels will be relatively light (<30%), grazing effects are not expected to be substantial, and plant communities are expected to improve.

Distribution would be expected to improve significantly compared to Alternatives A1 and A2, reducing the concentrated use areas of livestock and causing a more uniform utilization pattern. This would reduce the likelihood of livestock grazing in the same area the entire grazing season and defoliating the same plant several times during the grazing season. The reduced duration livestock graze each pasture compared to other alternatives would provide some opportunity for regrowth on pastures grazed in the early spring, allowing for a certain amount of recovery in native perennial vegetation, and would mitigate the effects of grazing during the critical growing season. Implementation of the Boise District Range Readiness Criteria would also ensure plant growth is adequate prior to livestock turnout.

Effects on upland woody browse species would be similar to Alternative A1, but to a much lesser extent. Livestock do not tend to focus on upland woody browse during the spring when herbaceous species are more palatable and nutritious.

Although this alternative would implement livestock grazing during the critical growing season every year, upland utilization would be limited to 30% or less, range readiness criteria would be applied, and livestock distribution would be improved compared to summer grazing/current management. The allotment would also see reduced duration of grazing in most pastures, and the "Tool Box" would be utilized if AIC were exceeded. Implementation of this grazing alternative (along with juniper treatments, as described below) would make significant progress toward meeting Standard 4 and all applicable Guidelines in the short and long term.

Fall

Fall grazing at proposed levels would have relatively minor effects on herbaceous upland vegetation. Van Poollen and Lacey (1979) showed that both grazing systems and grazing intensity affect herbage production, with grazing intensity having a greater effect. Since Alternative B has a relatively low stocking rate (based on acres/AUMs) and a favorable grazing system (avoiding critical growing season use if used during the fall), grazing effects on native herbaceous perennials in the fall are expected to be lower than Alternatives A1-C2. Additionally, the reduced duration livestock graze each pasture compared to other alternatives would also reduce the likelihood of livestock returning and grazing the same plant several times during the grazing season.

Because all grazing would occur outside of the critical growing period for perennial grasses and forbs, improved health, vigor, reproduction, and seedling establishment is expected for herbaceous plants (McLean and Wikeem 1985, Meays et al. 2000). Early season trampling effects would be eliminated, but replaced by those in late season, when soils may be wet from fall rain. This would have reduced effects on seedling establishment for spring germination, but may affect fall-germinating species, such as winter annuals like cheatgrass. Because soils are generally not as wet in the fall as they are in the spring and because most native annuals germinate in spring, trampling effects are less damaging in fall than spring.

The fall season of use in this alternative would have the greatest impact on upland woody browse species, such as bitterbrush, aspen sprouts, and mountain mahogany, since woody

species are usually utilized more often in the fall after herbaceous plants have dried (Fitzgerald et al. 1986). An increased use of these species by livestock is expected under this alternative compared to other alternatives, especially of young plants or sprouts. However, implementation of the AIC and "Tool Box" would mitigate these effects. Woody browse species are expected to remain stable, as successful reproduction is limited; rest associated with juniper treatments would provide for some recovery on the Scott Spring and Pole Creek Breaks Pastures.

Implementation of the AIC, "Tool Box," fall season of use, and juniper treatments would make significant progress toward meeting Standard 4 and all applicable Guidelines in the short and long term.

Effects of spring and fall grazing systems are described above, and any rotation between the two (i.e. Year 1 – spring use, Year 2 – fall use, Year 3 – spring use, etc.) would assume that those effects, positive or negative, would occur proportionally to the amount of time each season of use is implemented.

Effects from juniper management:
Juniper management (slashing, girdling, and broadcast or jackpot burning) would have direct effects on upland vegetation, particularly on juniper density and cover. The resulting community structure would be more widely spaced trees, with fewer continuous patches of thick juniper. Old growth juniper would be mostly retained, particularly on rocky areas and outcrops. Removal of young juniper adjacent to old growth would reduce fuel continuity around the older trees, and reduce the chance of future crown fires in old growth stands. Approximately 30-50% of the seral juniper is expected to remain, along with most of the old growth, resulting in a more heterogeneous mosaic of vegetation age classes across the landscape and increased biodiversity. Some old growth individuals would be killed by fire in the broadcast burn area; little or no old growth juniper mortality is expected in the cut and jackpot burn areas.

Direct effects on sagebrush, other shrubs, and herbaceous vegetation from juniper management include some minor, localized disturbance from hand cutting activities and blading fireline roads, which would damage or kill individual plants in the immediate area. Effects from the broadcast burn would likely be more substantial than cutting or blading due to the acreage involved, particularly to mountain big sagebrush and low sagebrush, which do not re-sprout after fire. Burning would reduce sagebrush and bitterbrush abundance for the short term (10-30 years) within burn areas. Burning would remove above-ground biomass of most species and kill non-resprouting shrubs. The broadcast burn is expected to be relatively patchy within the larger burn unit, creating a mosaic of burned and unburned areas which would provide a seed source for revegetation. Jackpot burn areas would be even more patchy, with a much smaller proportional burn area. Since fuel piling is not planned, numerous severely burned areas are not anticipated, but scattered areas with dense juniper would have high fuel loadings, and localized high severity burn pockets might occur. In localized high severity burn pockets, below-ground portions of plants would be killed, precluding re-sprouting.

Direct effects from juniper management on aspen and mountain mahogany would consist of minor disturbance from hand cutting adjacent junipers. Prescribed burning is expected to top-

kill aspen and mountain mahogany within burn patches. The aspen would readily re-sprout, resulting in healthy, young aspen stands (Howard 1996). Curl-leaf mountain mahogany rarely re-sprouts after fire, but would regenerate from seed (Gucker 2006). Thus, direct effects from prescribed fire would be a reduction in the amount of mature aspen and mountain mahogany in the allotment.

Burning would reduce soil cover, biotic crusts, current year biomass and potential seed production, and seeds on the soil surface for the short term (1-10 years). Prescribed burn conditions are anticipated to be less extreme (cooler and perhaps moister) than wildfire conditions, so lower burn severity is expected although pockets of higher burn severity may occur. Thus, within the prescribed burn mosaic a certain amount of litter and duff is expected to persist, and the soil seed bank is expected to remain intact in all but a few localized areas of high burn severity or short-term excessive erosion.

Indirect effects on upland vegetation from juniper management are expected to be positive, with short- and long-term increases in plant diversity, understory health and productivity, and community integrity (meaning increased dominance by native grasses and forbs). In the short term (under 10- 30 years), burn patches would be dominated by herbaceous vegetation and shrubs that resprout or have fire-stimulated seeds (particularly ceanothus, and chokecherry, serviceberry, rabbitbrush). Ceanothus may dominate extensive patches post-burn in some areas, before eventually (30+ years) being replaced by mountain mahogany. An increase in herbaceous vegetation, both grasses and forbs, is expected, particularly annuals and resprouting grasses the first few years. Sagebrush regeneration would be somewhat slower, since as a non-sprouter with short-lived seeds, it is dependent upon seed from surviving mature plants, so its recovery would depend on the burn patch size, and presence of an adequate adjacent seed source (Shaw et al. 2005). Bitterbrush is expected to regenerate mostly from seed (either seed caches which survive the fire or seed dispersed from adjacent unburned sites), although some bitterbrush resprouting is also expected. Long-term health of herbaceous vegetation and shrubs is expected to be improved compared to untreated juniper areas, due to increased light, soil moisture, and nutrients.

Aspen health is expected to be improved by juniper management, with a reduction in shading and competition from the juniper, and stimulation of sprouting from the prescribed fire. The result would be a conversion of scattered small, mostly old aspen stands to more extensive, healthy, rejuvenated aspen stands over a 10-30-year period. Treating multiple patches of aspen within the allotment, as planned, is likely to reduce effects from concentrating browsing (particularly by elk) on regenerating aspen sprouts.

Mountain mahogany would benefit in the long term from juniper cover reduction, and the return to a less severe fire regime (Gruell et al. 1985). Mountain mahogany would regenerate from seed in the soil seed bank as well as seeding from adjacent unburned areas (Gucker 2006). Although mahogany occasionally resprouts after low-severity fire, these sprouts typically die within 2-3 years (Gucker 2006). Since substantial older mahogany areas would be retained (on rocky, lower fuel areas within the broadcast burn unit and extensively within the jackpot burn areas), a balanced distribution of age classes is expected across the landscape.

Sagebrush ecological sites currently dominated by juniper would be converted to a community structure more similar to reference conditions, with retention of most old growth juniper individuals and small stand inclusions, and a reduction in younger trees and dense patches across the landscape. Junipers felled in the pre-burn cutting or that fall after the fire would create microsites that protect regenerating plants from grazing and browsing.

Indirect effects from juniper treatment on weeds, both noxious and other non-native invasives, include a potential increase in these plants, as open conditions conducive to weed dominance are created. A short-term flush of annuals, such as prickly lettuce and cheatgrass, is expected, especially along the road through the Dutcher Pasture. This road has documented non-native species in areas, but increased weed treatments as identified in the Standard Operating Procedures (SOPs) following burn treatments would reduce the likelihood of an increase of non-native species. Bulbous bluegrass may also increase in some areas after juniper treatment, although it is not expected to dominate. Based on observations from the Crutcher Fire (2007) near this allotment, these weeds are likely to be localized rather than dominant or abundant in the landscape. Research indicates that in adequate precipitation zone areas (such as this allotment); annual weed increases are likely to be short lived as native perennials regain dominance (Bates et al. 2006).

Post-fire response in sagebrush and juniper systems depend on the species composition, soil depth and texture, precipitation, elevation, aspect and other factors (Shaw et al. 2005). Xeric sagebrush sites are more susceptible to cheatgrass and other annual grass invasion (Davies et al. 2009). However, the Pole Creek Allotment is generally above (i.e., higher elevation and precipitation) the xeric Wyoming sagebrush zone. Also, most low sagebrush and other harsher sites would not be ignited for broadcast burning, although some fire may creep in from adjacent burn areas or jackpot burning. The targeted mesic mountain big sagebrush sites are expected to respond well to the mosaic of broadcast burning planned (Bunting et al. 2002).

Juniper treatment would alter the fire regime by reintroducing fire and reducing, at least for the short term, live woody biomass. Prescribed fire is expected to be less intense than wildfire since ignition would occur under cooler conditions than normally occur in a wildfire, so fire effects on soil and seed banks are expected to be less severe. After the prescribed fire, future wildfires are likely to be less severe. Similarly, the proposed juniper treatment would affect the FRCC of the Juniper Mountain area by reducing both the fire frequency departure (i.e. increase the fire frequency) and seral stage diversity departure, compared to reference conditions. If 50% of the seral juniper is killed, the reduction in departure may be enough to move the mountain big sagebrush and mountain mahogany strata from FRCC 3 (highly departed) to FRCC 2 (moderately departed).

Therefore, effects following the juniper treatment in the very short term (1-2 years) would result in a reduction of grasses and shrubs, but long term (5+ years) vegetative health would greatly improve and Standard 4 would make significant progress.

3.1.2.4 Alternative C1

Alternative C1, the proposed action, would have upland vegetation effects similar to those identified in the spring grazing portion of Alternative B. The incorporation of juniper treatments, rest, and deferment would result in increased upland plant growth, vigor, and cover compared to Alternatives A1 and A2. The changes to grazing management in conjunction with juniper treatments would result in making significant progress toward Standard 4 and in compliance with all applicable guidelines on the allotment.

Effects from grazing management:

Effects of Alternative C1 would be similar to Section 3.1.2.3, Alternative B – Spring, but with the following differences. Alternative C1 would implement a 30% reduction in Active AUMs compared to Alternative A2, and a rest rotation which would provide an entire year of rest on the Pole Creek Breaks, Scott Spring, Horse Flat, and Berry Gulch Pastures every other year. The stocking rate of the grazed pasture is heaviest in this alternative; therefore higher upland utilization levels (expected to be approximately < 50%) than Alternative A1 would be expected in this pasture. However, because the residual litter/cover/forage from the previous year of rest would provide additional forage, and plant vigor would improve due to rest, utilization levels are expected to be below 50%. Duration of grazing is highest in this alternative which would increase the likelihood that livestock regraze plants multiple times during the grazing period, thus reducing the plants' vigor. Spring grazing during the critical growing season would reduce native bunchgrass vigor and the plants' ability to reproduce (Smith 1998, Brewer et al. 2007). However, implementing five out of ten years rest would mitigate against these effects. Indirect effects from Alternative C1 grazing management include a change in species composition and potential increase in species diversity, as rest would result in an increase in more palatable species and a decrease of less palatable species (Brewer et al. 2007).

In the Dutcher Pasture, a relatively low stocking rate, deferment every other year, and expected light utilization levels are expected to improve plant vigor, recruitment, and soil cover. Therefore, the pasture would make progress toward Standard 4 and all applicable Guidelines in the short and long term.

Implementing rest or deferment, spring use (increased available water resources), and range readiness would improve distribution and increase plant vigor and residual litter/cover/forage; thus Alternative C1 would make significant progress toward Standard 4 and all applicable Guidelines in the short and long term.

Effects of range improvements would be the same as Alternative B.

Trampling effects to vegetation would be similar to Alternative A1, but moderately more on grazed pastures and completely absent on rested pastures. Therefore, no trampling effects for five out of ten years would reduce overall effects from trampling that occur during use years.

Effects of livestock trailing/crossing would be the same as Alternative A1.

Effects from juniper management:

Effects of juniper treatments would be the same as Alternative B.

3.1.2.5 Alternative C2

Alternative C2 would have upland vegetation effects similar to those identified in Alternative C1. However, the rate of progress towards meeting Standard 4 would be greater due to a 40% reduction in AUMs compared to Alternative A1. The incorporation of juniper treatments, AUM reduction, rest, and deferment would result in increased upland plant growth, vigor, and cover compared to Alternatives A1, A2, and C1. The changes to grazing management in conjunction with juniper treatments would result in making significant progress toward Standard 4 and all applicable Guidelines.

Effects from grazing management:
Effects of Alternative C2 would be similar to Section 3.1.2.4, Alternative C1, but improvements to upland vegetation would occur faster and to a greater extent because active use would be 48% less than Alternative C1 (535 AUMs versus 1,029 AUMs) and the days on each pasture are reduced (from 76 days to 61 days for most pastures). Implementation of this alternative would result in approximately 20% (or less) upland utilization. Thus, negative effects on plant vigor from critical growing season grazing and potential regrazing within a season would be reduced. This reduced use, along with rest or deferment (as in Alternative C1) and juniper treatments, would provide for meeting Standard 4 faster than any of the previous alternatives.

Effects of range improvements would be the same as Alternative B.

Effects of livestock trailing/crossing would be the same as Alternative A1.

Effects from juniper management:
Effects of juniper treatments would be the same as Alternative B.

3.1.2.6 Alternative D

Alternative D, the ten year extended rest alternative and implementation of juniper treatments, would make significant progress toward meeting Standard 4 and all applicable Guidelines. Vegetative structure and diversity, residual cover, and available forage would increase in all vegetative types and would make significant progress toward meeting Standard 4 and all applicable Guidelines faster than any other alternative.

Effects from grazing management:
Alternative D would make progress in meeting Standards at a faster rate than any other alternative. The combination of juniper treatments and extended rest for a ten year period would have substantive positive effects on plant community integrity and biodiversity in the Pole Creek Allotment.

No direct livestock grazing effects (including trailing/crossing) on upland vegetation or weeds in the Pole Creek Allotment would occur under this alternative because of the extended rest. Indirect effects from extended rest on upland vegetation and noxious and invasive weeds would result in more rapid recovery in plant community health, but noxious and invasive weeds would

persist and continue to spread, even without the potential for livestock to spread seed, due to the dispersal through wind, water, wildlife, recreation, and motorized vehicle travel. An increase in perennial grasses and forbs is expected, particularly a substantial increase in the more palatable species. Mueggler (1975) found that vigor recovery took three to six consecutive years for Idaho fescue and six to eight consecutive years for bluebunch wheatgrass after heavy clipping (although no recent (4+ years) heavy grazing has been documented in the Pole Creek Allotment); Alternative D provides this extent of rest. No livestock trampling effects would occur. Soil cover from vegetative litter would remain high every year, resulting in increased productivity and reducing soil loss. Plant seed production would not be limited. Seedling establishment would favor those species whose seedlings are more shade tolerant and able to establish in organic matter, resulting in a shift toward more perennials and reducing conditions conducive for invasive weeds. Woody browse species would be eaten only by native ungulates, reducing overall effects on these shrubs. Aspen and mountain mahogany reproduction would be limited only by native browsers. Biotic soil crusts would increase cover over time. Due to an increase in fine fuels, fire return intervals would be closer to historic return intervals appropriate to the ecological sites on the allotment. No effect from range improvements or maintenance would occur, except that rehabilitation at Big Willow and Horsehead springs would cause short-term (1-5 years) soil and vegetation disturbance, but long-term (>5 years) improved vegetation conditions due to more natural contouring and drainage.

After ten years without livestock grazing and with juniper treatments, the Pole Creek Allotment would have a more diverse mosaic of healthy native plant communities, with interspaces more dominated by large bunchgrasses (bluebunch wheatgrass, Idaho fescue, and needlegrasses) and native forbs. Noxious and invasive weeds would continue to be present, but native species would be able to compete more effectively. Young shrubs would occur in patches throughout the allotment, and older stands of sagebrush, mahogany, and other shrubs would provide structure and cover. Old growth juniper would remain, primarily in rocky areas, and a large component of young juniper would also be present, but not dominate the landscape. Aspen stands would increase in extent, and consist of denser, younger stands.

Effects of juniper management:
Effects from juniper management would be the same as described in Alternative B.

3.2 Watershed and Soils

3.2.1 Affected Environment – Watershed/Soils

Roughly 35% of the allotment is within the North Fork Owyhee watershed, while 65% is within the Middle Fork Owyhee watershed and both are part of the Middle Owyhee Sub-basin. Allotment soils are diverse due to position on the landscape and parent material sources. These soils occur on foothills, structural benches, and tablelands, and are formed in mixed alluvium and residuum from welded rhyolitic tuffs and breccias. These soils are shallow to moderately deep (with deeper inclusions) and well drained, and generally have a xeric soil moisture regime and frigid soil temperature regime. The Hat and Cleavage series are more representative of the soils in the upper two-thirds of the allotment (USDA-NRCS 2003a). These soils are generally loamy with high amounts of coarse fragments both on the surface and in the profile. The Hat,

Cleavage, Wickahoney, and Yatahoney series are more common in the lower third of the allotment (USDA-NRCS 2003a). The Wickahoney and Yatahoney soils are generally more clayey. The water erosion hazard on these soils is generally slight to moderate with the exception of the soils that occur on slopes greater than 30 percent, which have a moderate to high hazard of erosion from water. However, the amount of rock fragments on the surface can greatly modify the erosion hazard. Wind erosion hazard is low.

The 2012 Pole Creek Evaluation and Determination (Appendix B) identified that Standard 1 was not being met and that it was not due to current livestock grazing management. The primary causes for not meeting the standard are accelerated erosion from past livestock management and the lack of native bunchgrasses and the increase in juniper. Observed erosion indicators such as pedestalled bunchgrass and water flow patterns were observed throughout the allotment, but varied in intensity. It was also noted that much of the accelerated erosion was related to long-term erosional processes, meaning that historic grazing likely contributed to accelerated erosion. Areas of bare ground were observed, but were not extensive. Upland vegetation was expected to improve due to changes in grazing management in 2008. Decreased stocking rate (892 AUMs) over the last four years and light upland utilization likely improve palatable grass communities and increase soil cover. However, ground cover comparisons from trend monitoring data show a reduction in perennial basal vegetation at all five trend sites and an increase in woody plant canopy cover at three of five trend sites between 2000 and 2009 (Appendix H). The 2011 Trend Data-Summary- and Analysis report identified that bare ground was mostly stable between 2000-2009, but non-persistent litter increased significantly, while more durable soil cover elements decreased at three of five trend sites (Appendix H). This suggests that there has not been an improvement in herbaceous vegetative cover. Mechanical damage to the soil surface by hoof action was present where livestock tended to congregate (riparian areas, water developments, salting areas or at certain gates).

Encroachment of western juniper has had a negative influence on hydrologic cycles, and vegetative community composition and diversity. Juniper is highly competitive in terms of available soil moisture, nutrients, and understory photosynthetic needs (Pierson et al. 2007, Wilcox and Davenport 1995). The 2012 Evaluation and Determination identified juniper encroachment is evident throughout the allotment. Landsat imagery data gathered from PNNL identify that juniper cover represents 45% of the allotment. Due to the increasing juniper population, shrub frequency, bunchgrass composition and growth form, and possibly stream flows have diminished. As juniper increases, and shrubs and bunchgrasses are lost from the plant community, hydrologic function is impaired, due to the lack of diversity in plant structure and spatial distribution of roots. Fibrous grass roots stabilize soils and contribute organic matter to the upper soil profile, while sagebrush roots have been shown to be important vectors for moving moisture deep into the soil profile, where it can recharge water tables and reduce drought intensity.

3.2.2 Environmental Consequences – Watershed/Soils

3.2.2.1 Alternative A1

Continuation of the current situation would not meet or make significant progress toward meeting Standard 1. The primary causes for not meeting the standard are accelerated soil erosion from past livestock management and the lack of native bunchgrasses/increase in juniper. Juniper encroachment would continue unabated under this alternative and result in decreased plant biomass, insufficient residual litter amounts and persistent soil cover, decreased root structure diversity, increased soil erosion, and altered hydrologic cycle.

Direct and indirect effects from grazing management:
Overall watershed condition is closely tied to the health of the biotic community and soil surface stability. Vegetation is the primary factor that influences the spatial and temporal variability of soil processes (USDA-NRCS 2003b), and as vegetation condition changes, so does runoff, erosion, and infiltration. The 2012 Pole Creek Evaluation and Determination identified that Standard 4 is not being met on the loamy big sagebrush sites and on some low sagebrush sites, both due to localized replacement with juniper. Changes to grazing management (fewer AUMs and lower utilization) in 2008 were expected to improve upland vegetation by increasing palatable grass communities and increasing soil cover. However, ground cover comparisons from trend monitoring data showed a reduction in perennial basal vegetation at all five trend sites and an increase in woody plant canopy cover at three of five trend sites between 2000 and 2009. The 2011 Trend Data-Summary and Analysis report identifies that bare ground was mostly stable between 2000-2009, but non-persistent litter increased significantly, while more durable soil cover elements decreased at three of five trend sites. This suggests there may not have been an improvement in herbaceous vegetative cover.

Continued light utilization would promote deep-rooted native bunchgrass species over the short term (3-10 years). Associated increases in fibrous soil-binding roots, canopy cover and litter would result in increased soil protection from raindrop impact, increased infiltration, and reduced distance and frequency of overland flow during storm events. However, juniper encroachment would continue and in the long term (≥20 years), the native bunchgrass and shrub components would decline, resulting in decreased soil protection, root structure diversity, and infiltration and water holding capacity of the soils, which reduces overall soil nutrient cycling.

Soil impacts from livestock trailing would be minimal because trailing would occur along a road that is already compacted from vehicle travel. The short duration (up to four days) and adherence to Range Readiness Criteria would prevent additional soil compaction.

Effects of not treating the expanding juniper:
Continued juniper encroachment would increase the potential for accelerated soil erosion. As juniper increases, the juniper-dominated hill slopes would have reduced herbaceous plant and litter cover, and would produce rapid runoff from even low-intensity rainfall events (Miller et al. 2005, Pierson et al. 2007). Rainfall impact directly on exposed soil can result in sheet erosion, and large interconnected patches of bare ground can concentrate runoff into rills and possibly gullies. Short-term effects would be the initial loss of top soil in areas lacking cover.

Eventually, some subsoil loss could occur. The long-term effects would be a reduction in vegetation community productivity (Miller et al. 2005) and a high unlikelihood of restoring the communities in the future (Bunting et al. 2002). In the long term, signs of accelerated erosion such as water flow patterns, pedestalled plants, and increased bare ground that have previously been observed would continue to occur.

3.2.2.2 Alternative A2

Livestock grazing at the 1997 permit levels would not meet or make significant progress toward meeting Standard 1. Grazing management at that level and no juniper treatments would result in decreased plant biomass, insufficient residual litter amounts and soil cover, increased soil erosion, and altered hydrologic cycle.

Direct and indirect effects from grazing management:
Overall watershed condition is closely tied to the health of the biotic community and soil surface stability. Vegetation is the primary factor that influences the spatial and temporal variability of soil processes (USDA-NRCS 2003b), and as vegetation condition changes, so does runoff, erosion, and infiltration. The 2001 Pole Creek Determination (USDI-BLM 2001) described the effects of this grazing management, and identified that the allotment was not meeting Standards 1 and 4 and livestock grazing management was a significant factor. Livestock use would occur during the active growing season every year for the first few weeks after turnout in higher elevation areas and no rest or deferment would be provided to plants; therefore, any improvements to plant communities would be minimal. Signs of accelerated erosion such as water flow patterns and plant pedestalling would increase in the short (3-10 years) and long term (>20 years) due to the lack of soil cover by litter and plant canopies. Lower elevation areas may continue to move toward meeting Standard 1 in the short term due to plant community improvements. However, decreases in persistent litter and herbaceous cover (Appendix H) decreases soil cover necessary for nutrient cycling, and increases the potential for soil erosion in the long term. Other long-term effects to upland soil cover would be the same as in the high elevation areas. The continued encroachment of juniper and bulbous bluegrass has altered the native plant community and in the long term, these plant community changes are altering, and would continue to alter the nutrient cycling, hydrologic cycling, and nutrient flow from what is expected for the area (as described in Section 3.2.2.1 Effects of not treating the expanding juniper).

Mechanical impacts to the soil surface from hoof action would continue where livestock tend to trail and congregate, with riparian areas impacted more due to the hot season grazing schedule (see Section 3.4.2.2).

Effects from livestock trailing on soils are the same as those described in Alternative A1.

Effects of not treating the expanding juniper:
Effects to watershed and soil resources are the same as those identified in Alternative A1.

3.2.2.3 Alternative B

Alternative B, the adaptive management alternative, would make significant progress toward meeting Standard 1. Adaptive management flexibility and juniper treatments would improve livestock distribution and utilization compared to Alternative A1 and A2, and allow for changes in management to meet the annual indicators and eventually meet Standard 1.

Direct and indirect effects from grazing management:
Changing to a spring season of use would improve distribution throughout the allotment for uplands due to increased water availability and palatable/nutritious forage on the uplands (Clary Webster 1989). Better livestock distribution and adherence to a lower utilization limit would improve upland vegetation communities, increase vegetation soil cover/decrease bare ground, and overall decrease the susceptibility of the area to accelerated erosion. However, use would occur during the critical growing season and spring use can be detrimental to vegetation vigor, reproduction, and cover (Smith 1998, Brewer et al. 2007), increasing the overall potential for erosion. These effects should be minimized by the improved livestock distribution. Additionally, implementation of the AIC would ensure that resources are monitored regularly and criteria are in place to determine the effectiveness of the livestock management. If criteria were exceeded due to livestock grazing management, the "Tool Box" would require livestock grazing practices to be changed so as to make significant progress toward Standard 1.

If adaptive management shifts grazing from spring to fall, fall use would result in improved herbaceous vegetation health, vigor, and reproduction. Grazing would occur after the critical growing period for upland grasses and forbs, allowing for reproduction, improved vigor and health. However, fall season of use has some inherent risks as livestock tend to browse woody vegetation more in the fall (see Section 3.1.2.2). Additional pasture rest associated with juniper treatments would lessen the grazing pressure on herbaceous vegetation in Scott Spring and Pole Creek Breaks Pastures, and monitoring and subsequent grazing management changes based off the annual indicators would minimize these risks.

Short and long-term effects to soil and watershed resources include less physical damage (hoof impact, trampling, soil compaction) to soil surface due to shorter grazing duration, a lighter stocking rate, and increased vegetation growth and vigor producing more vegetative and litter soil cover. Stabilization of previous erosional scars and fewer incidents of accelerated erosion would be expected with increased vegetation soil cover. Also, upland vegetation cover in Scott Spring and Pole Creek Breaks Pastures would improve due to the three consecutive growing seasons' rest associated with the juniper treatments. As vegetation condition improves, reduced runoff and erosion and increased infiltration would be expected.

However, some soil pugging and compaction could occur during the spring grazing schedule. Medium to heavy-textured soils (typically clays) are susceptible to damage (pugging and compaction) during spring grazing season because these soils tend to have high moisture-holding capacity and are usually at near field capacity or have a higher water content due to snow melt. Spring storms in April and in some instances, beginning of May could add enough water to the soil profile, that when livestock are present, would cause soil damage. The south-western portion of the Pole Creek Breaks Pasture is the most susceptible due to the combination

of soil type and livestock pasture on date (April 15th). Adherence to the Range Readiness Criteria would alleviate many of the impacts. Fall season use does not have these particular limitations because soils are generally not saturated during the fall use period.

Effects from range improvement projects (fence construction/exclosure expansions, pipeline reconstruction, and cattleguards) would occur as small, localized disturbances. These short-term, small area disturbances result from construction and minor changes in livestock trailing, causing some soil compaction and potential weed invasion due to vegetation disturbance. In the long-term, these projects indirectly improve soil resources throughout the allotment by improving the livestock management. Pasture division fences, cattleguards, gap fences and exclosure expansion fences would prevent unauthorized livestock access and improve livestock distribution. The pipeline reconstruction would provide a reliable water source for livestock, relieving pressure from riparian areas and aiding in livestock distribution. Improving livestock distribution decreases potential for soil compaction, indirectly improving vegetation soil cover, and decreases the potential for accelerated erosion.

Effects from livestock trailing on soils are the same as those described in Alternative A1.

Direct and indirect effects from juniper management:
The proposed juniper treatment (girdling, cutting, burning) would impact soil and watershed resources in a variety of ways, and overall would be beneficial to watershed and soil resources. In the short term (the spring immediately following fire), there is potential for excessive erosion due to loss of juniper ground cover and fire-induced/natural water repellency (Miller et al. 2005). The erosion would be most evident on steeper sloped terrain and would consist of rilling and some gullies. The potential vegetation loss from broadcast burning could result in potential landslides, particularly on steeper slopes. However, the broadcast burn treatment projects a 50-70% seral juniper mortality rate in treated areas, leaving approximately 30-50% seral juniper along with patches of understory vegetation to mitigate some effects by protecting and stabilizing a portion of the soil surface. Additionally, stream channels are at risk of widening and/or down cutting from episodic high intensity storm events because of a general lack of soil binding vegetation.

In the short term, there is a possibility of soil nutrient loss from the broadcast burn treatment areas. Research has identified a flush of nutrients available immediately after cutting or burning (Miller et al. 2005). Cutting and leaving woody biomass in place to decompose slowly (as in most of the jackpot burn areas) has a lower likelihood for accelerated erosion and subsequent soil nutrient loss to take place, as compared to larger expanses of burned areas (>1,000-acre patches, not expected in these treatments).

Long-term effects of the proposed juniper treatment would be an overall decrease in surface erosion, and the potential increase in spring flows and groundwater storage. With the expected increase in herbaceous vegetation and ground cover after juniper treatment (see Section 3.1.2.3), erosion potential would decrease in the treated areas (Miller et al. 2005). This change in cover and vegetation density would alter the area hydrology, likely at a small scale, and retain much of the overland flow and increase infiltration in these areas. Research from Deboodt et al. (2009)

identified that removal of post-settlement juniper changed the water balance equation in an Oregon watershed; specifically, spring flow, groundwater, and soil moisture all increased compared to pre-treatment levels. The Pole Creek Allotment water balance may change and may exhibit similar increases in spring flows, groundwater, and soil moistures due to the proposed juniper management. The increased light, available nutrients, and improved soil moisture would improve the overall condition of the herbaceous vegetation and shrubs compared to the untreated juniper areas. In the long term, juniper treatments are necessary to make significant progress toward meeting Standard 1.

3.2.2.4 Alternative C1

The proposed action would make significant progress toward meeting Standard 1. Upland vegetation effects are similar to those identified in the spring grazing portion of Alternative B; the incorporation of rest and deferment would result in increased upland plant growth, vigor, and cover compared to Alternative A1 and A2.

Direct and indirect effects from grazing management:
Compared to Alternative A1 and A2, stocking rates are heavier in all pastures except for in Dutcher, and livestock use would occur for longer periods of time and during the active growing season. Heavier stocking rates and use during the critical growing season can be detrimental to vegetation vigor, reproduction, and cover, thus increasing the potential for erosion. However, pasture rest (minimum five years in Scott Spring, Horse Flat, Berry Gulch, and Pole Creek Breaks) and deferment in the Dutcher Pasture should minimize the stocking rate/critical growth period use effects and improve upland vegetation communities. Vegetation cover and density would improve due to the numerous periods of rest, resulting in increased litter, roots, and overall soil surface cover. Increased litter and soil cover would protect the soil surface from raindrop impact and erosion, and increased roots or below ground biomass would improve soil properties such as infiltration and soil nutrients.

Short and long-term effects to soil and watershed resources would include less physical damage (hoof impact, trampling, soil compaction) to soil surface due to rest/rotation grazing schedule, rest associated with juniper treatments (in Scott Spring and Pole Creek Break Pastures) , and a lighter stocking rate (compared to Alternative A2) in the Dutcher Pasture. Increases in vegetation biomass and vigor would occur and produce more vegetative and litter soil cover. Stabilization of previous erosional scars and fewer incidents of accelerated erosion would be expected with increased soil cover. Additionally, as vegetation conditions improve, surface cover and roots increase, thereby increasing surface roughness and soil macropores that increase water infiltration and decrease soil erosion.

The Horse Flat and south-western portion of Pole Creek Breaks Pastures are more susceptible to soil damage due to their specific soil type and livestock pasture on date (April 16). Adherence to Range Readiness Criteria and year-long rest would minimize impacts. In addition, both pastures would be rested five out of ten years, decreasing livestock time in the specific pasture (over a ten year period), allowing natural forces such as frost heaving and increased roots from improved vegetation communities to improve soil physical properties (such as decreasing compaction and increase soil organic matter).

Effects from livestock trailing on soils are the same as those described in Alternative A1.

Proposed range projects effects on watershed/soil resources are the same as those identified in Alternative B.

Direct and indirect effects of juniper management:
Effects to watershed and soil resources are the same as those identified in Alternative B.

3.2.2.5 Alternative C2

Effects from grazing, trailing, and range projects to watershed and soil resources are similar to those identified in Alternative C1. This alternative would make significant progress toward meeting Standard 1. Improvements (increased litter and soil cover, less soil physical damage) would likely occur faster and to a greater magnitude than in Alternative C1 because of the much lower AUMs (535 compared to 1029 in Alternative C1).

Direct and indirect effects of juniper management:
Effects to watershed and soil resources are the same as those identified in Alternative B.

3.2.2.6 Alternative D

Alternative D, the ten year extended rest alternative, would make significant progress toward meeting Standard 1. Effects from ten years rest from livestock grazing coupled with juniper treatments would make progress toward meeting Standard 1 faster than the previous alternatives.

Direct and indirect effects from grazing management:
Extended rest from livestock grazing would improve perennial plant vigor and production, along with subsequent reproduction and establishment. The increased canopy cover, surface litter, above ground structural material, and fibrous root matter would aid in protecting the soil from both wind and water erosion. Site productivity would increase. Any mechanical damage to the soil surface from livestock hoof action would cease. Short and long-term effects to the soil resource would be positive, and watershed health would be improved. This alternative would make progress toward meeting Standard 1 faster than all other alternatives due to the lack of direct and indirect effects associated with livestock grazing. However, the juniper treatments associated with this alternative are necessary in order to achieve significant progress.

The effects from the Horsehead and Big Willow Spring projects on watershed/soil resources are the same as those identified in Alternative B.

Direct and indirect effects of juniper management:
Effects to watershed and soil resources are the same as those identified in Alternative B.

3.3 Water Quality

3.3.1 Affected Environment – Water Quality

Streams with designated beneficial uses are addressed under the Idaho Administrative Procedures Act (IDAPA) 16.01.02.140. All streams within the Pole Creek Allotment have general use designations for secondary contact recreation, agricultural water supply, wildlife habitat, and aesthetics. The Middle Fork Owyhee River has been assigned additional designated uses including domestic water supply, cold water biota, salmonid spawning, primary contact recreation, and special resource water. Squaw Creek also has additional beneficial uses of cold water biota and salmonid spawning.

Map 8 identifies IDEQ's water quality status of streams in the Pole Creek Allotment. Idaho DEQ identified that the Middle Fork Owyhee River was not supporting cold aquatic life and salmonid spawning beneficial uses, and Squaw Creek and a 1.5 mile reach of Pole Creek are meeting their beneficial uses. Consequently, the Middle Fork Owyhee River from the headwaters to the Oregon/Idaho state line is on the State of Idaho's 303(d) list as water quality limited due to flow alteration and thermal modification (IDEQ 2011). Total maximum daily loads (TMDLs) were developed for stream temperature in the Middle Fork Owyhee River. The State of Idaho recently determined the water quality standard in Middle Fork Owyhee River and Squaw Creek is being met (de-listed) for sediment/siltation. Squaw Creek was also de-listed for thermal modification (IDEQ 2011).

The 2012 Pole Creek Evaluation and Determination identified that waters in the allotment were not meeting Standard 7 (Water Quality) and that livestock grazing was a significant factor.

In 2004 stream temperatures were monitored continuously for up to four months in the Middle Fork Owyhee River, Squaw and Scott Spring Creeks and the results as it pertains to Cold Water Biota criteria are presented in Table WQ1. All three stream reaches exceeded the Cold Water Biota criteria, however only 2 out of 52 days exceeded the 22°C criteria and only by 0.2°C in Squaw Creek.

Table WQ1. Water temperature statistics and exceedances for the State of Idaho Cold Water Biota. Measured in 2004.

Criteria	Cold Water Biota Temperature Exceedance Counts								
	Middle Fork Owyhee River			Squaw Creek			Scott Spring Creek		
	#	%		#	%		#	%	
22 °C Instantaneous	64	71%		2	4%		37	64%	
19 °C Average	13	14%		0	0%		0	0%	
Days Evaluated & Date Range	90	*17/Jun*	*14/Sep*	52	*6/Jul*	*26/Aug*	58	*29/Jun*	*25/Aug*
	STATISTICS								
Instantaneous Maximum	26.2 ºC			22.2 ºC			25.1 ºC		
Instantaneous Minimum	6.7 ºC			7.9 ºC			9.5 ºC		
Overall Mean	16.8 ºC			14.1 ºC			16.2 ºC		
Mean Daily Maximum	22.7 ºC			19.4 ºC			22.0 ºC		
Mean Daily Average	16.8 ºC			14.1 ºC			16.2 ºC		

Mean Daily Minimum	12.2 ºC	10.5 ºC	12.5 ºC
Maximum Daily Average	19.7 ºC	15.9 ºC	18.5 ºC
Maximum 7-Day Maximum	25.4 ºC	21.1 ºC	23.9 ºC
Maximum 7-Day Average	19.3 ºC	15.4 ºC	17.9 ºC
Minimum 7-Day Minimum	8.1 ºC	9.0 ºC	10.5 ºC

*Continuous water temperature data measured with HOBO® water temperature sensors.

Thermal modification in the Middle Fork Owyhee River and Scott Spring Creek and their tributaries is likely due to the loss of shade producing vegetation such as shrubs and herbaceous grass-like species along streambanks. Additionally, streambank alteration caused by livestock (trampling, pugging, shearing, etc.) increases stream width and decreases depth, thereby exposing more water to solar radiation and increasing water temperature.

Although the Middle Fork Owyhee River and Squaw Creek have been removed from the 303(d) list ("de-listed"), excessive sedimentation is likely occurring from these and other streams. The major sediment contributor is likely unstable, eroding streambanks resulting from excessive livestock use and juniper encroachment. Streambank alteration data from seven stream reaches monitored for three years ranged from 4-89% bank alteration (Figure WR2), with a 35% median bank alteration. Excess bank alterations from livestock trampling, pugging, and shearing exposes bare soil and increase the likelihood for sedimentation.

Water samples collected in 2006 and again in 2009 identified varying concentrations of *Escherichia coli* (*E. coli*) in several stream reaches (Table WQ2 and WQ3). Idaho DEQ water quality standards for primary and secondary contact recreation should not exceed 406 and 576 MPN/100mL (bacteria as organisms per 100 milliliters of water), respectively. Based off of one sample, water quality standard for secondary contact recreation was exceeded in Scott Spring, Peach, and Helen creeks in 2006, but were within standards in 2009. The primary contact recreation water quality standard only applies to the Middle Fork Owyhee River, where the standard was not exceeded in either of the two years monitored.

Table WQ2. *E. coli* concentrations from various streams within the Pole Creek Allotment collected in 2006.

Water Body	Number of Water Samples[1]	Concentration (per 100mL)[2]
Middle Fork Owyhee River	5	Between 1-150
Pole Creek	1	190
Scott Spring Creek	1	>2400
Peach Creek	2	550 and >2400
Helen Creek	1	2400
Squaw Creek	2	19 and 160

[1]Muliple water samples were taken at different locations along stream reach.
[2]Concentrations are reported as "bacteria as organisms per 100 milliliters".

Table WQ3. *E. coli* concentrations from various streams within the Pole Creek Allotment collected in 2009.

Water	Concentration

Body	(per 100mL)[1]
CCC Spring Creek	4
Little Willow Creek	50
Scott Spring Creek	30
Squaw Creek	180
Middle Fork Owyhee River 001	100
Middle Fork Owyhee River 002	400

[1]Concentrations are reported as "bacteria as organisms per 100 milliliters".

Although not identified as a causal factor for not meeting Standard 7 in the 2012 Evaluation and Determination, juniper encroachment is affecting water quality throughout the allotment, as described in Sections 3.2.1 and 3.4.1.

3.3.2 Environmental Consequences – Water Quality

3.3.2.1 Alternative A1

Alternative A1, continuation of the current situation, would not make significant progress toward meeting Standard 7. Hot season grazing would concentrate livestock use on riparian areas resulting in reduced riparian zone buffering capacity and increased sedimentation and stream temperatures.

Direct and indirect effects from grazing management:
Idaho DEQ standards would not be met in the short and long-terms. All streams within the allotment would be affected; however, waters currently not meeting IDEQ standards, such as the Middle Fork Owyhee River, would be adversely affected first. Stated in Section 3.4.2.1, the majority of monitoring data indicates heavy riparian vegetation utilization and associated streambank damage due to livestock grazing in riparian areas. This would likely continue under similar "hot season" use as planned under Alternative A1. Thermal modification due to the loss of shade-producing vegetation, such as shrubs and herbaceous grass-like species along streambanks, would continue. Additionally, sediment deposits from streambank alteration (i.e., trampling and shearing) and increased soil erosion from juniper encroachment (Pierson et al. 2007, Miller at al. 2005) would increase fine sediment yield in the channel. This reduces sediment transport capacity, and eventually increases stream width, aggradation, while decreasing depth, which exposes more water surface to solar radiation. Water temperatures would substantially increase, and streams are likely to be more turbid and sediment laden. The Middle Fork Owyhee River would not meet the temperature TMDL in the near future.

Alternative A1 includes 892 AUMs. This section highlights that hot season grazing, even at significantly reduced numbers and AUMs, is extremely problematic on this allotment.

Livestock trailing through the allotment would have little effect on water quality due to the limited duration on the allotment and no crossing of any perennial riparian areas. Dust from the

trailing could enter waterways and increase turbidity in a localized area for a very brief time (up to four days) and is unlikely to significantly contribute to stream turbidity and sedimentation.

Effects of not treating the expanding juniper:
Juniper encroachment would continue without juniper treatments under this alternative. This would increase water runoff and the potential for accelerated soil erosion. As juniper increases, the juniper-dominated hill slopes would have lower herbaceous plants and litter cover, and would produce rapid runoff from even low-intensity rainfall events (Pierson et al. 2007). With current riparian conditions, there would be little buffering capability, and sediment and overland flow could enter stream systems. In some of the stream systems, rapid runoff, coupled with unstable streambanks and the general lack of deep-rooted riparian plants, would cause channel widening or incision to the point where little soil is left in the riparian areas. Increased turbidity and sedimentation would likely occur in streams allotment wide.

3.3.2.2 Alternative A2

Effects to water quality from livestock grazing and continued juniper expansion are similar to those identified in Alternative A1. This alternative would not meet Standard 7 in the long or short terms. Effects (sedimentation, increasing stream temperatures due to loss of vegetation, etc.) would likely occur to a greater magnitude than in Alternative A1 because livestock would stay on pasture for the entire grazing term, increasing livestock duration and hot season use in riparian areas.

3.3.2.3 Alternative B

Alternative B, the adaptive management alternative, would make significant progress toward meeting Standard 7 in the long term (5-10 years). Spring season of use and the flexibility of adaptive management would improve livestock distribution and utilization compared to Alternatives A1 and A2, and allow for changes in management to meet the annual indicators, thus improving riparian vegetation and channel morphology, and improving overall water quality.

Direct and indirect effects from grazing management:
Water quality effects due to the proposed changes in grazing management and range projects are closely tied with riparian vegetation conditions, as described in Section 3.4.2.3. As riparian vegetation condition improves and streambanks stabilize, sedimentation, turbidity, and stream temperatures would decrease. Stream channel morphology would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease and stream shading levels increase due to the development of dense and vigorous riparian plant communities. In the long term, Idaho water quality standards would be met in Middle Fork Owyhee River and its subsequent removal from the 303(d) list would be expected.

The proposed range improvement projects would indirectly affect stream water quality. Constructing an exclosure on Middle Fork Owyhee River and adding gap fences on Little

Willow Spring and Scott Spring Creek drainages and on the Middle Fork Owyhee River would restrict livestock access through these drainages and ultimately limit livestock access to the Middle Fork Owyhee River. Lotic conditions are expected to improve unhindered from livestock grazing, and sedimentation, turbidity, and water temperatures would decrease as riparian vegetation and channel morphology improve. Construction of pasture division fences and adding two cattleguards would improve livestock management and distribution by limiting livestock access and preventing unauthorized use from outside the allotment, reducing impacts to water resources. The Horsehead Spring and Big Willow Spring rehabilitation projects would decrease water draining from the wetlands, improving their function, and thus improve water quality.

Effects from livestock trailing are the same as those described in Alternative A1.

Direct and indirect effects from juniper management:
Water quality effects due to the proposed juniper treatments are closely tied with riparian conditions, as described in Section 3.4.2.3. There is a potential for excessive erosion and sedimentation in a majority of the streams from the juniper treatments. The short term absence of streambank binding riparian vegetation (due to juniper treatments), combined with high intensity storm events (estimated 10-20 year storm event) would degrade water quality due to excessive sedimentation. Even under typical precipitation, increased sedimentation from erosion on denuded slopes could affect water quality. Additionally, increased fine sediment yield from excessive upland erosion would reduce sediment transport capacity. This in turn leads to increased stream width, aggradation, and decreased depth, which exposes more water surface to solar radiation. Stream temperatures would increase. Reduced stream shading is expected, also increasing water temperatures. Effects of the juniper treatment would be allotment wide, but especially where broadcast burning near perennial waters is proposed. However, these effects are short term. Previous studies identify erosion rates typically returning to pre-fire rates in five years after a prescribed or wildfire (Miller et al. 2005).

Long-term effects of the proposed juniper treatment are overall decrease in stream temperatures and decrease in sedimentation rates, leading to meeting IDEQ water quality standards. All streams within the allotment that were in or adjacent to juniper treated areas would be affected. Upland and riparian vegetation (herbaceous and shrubs) would increase over time as juniper is removed, reducing surface water runoff and upland erosion. Reductions in stream temperature and sediment yield would occur as the willow and herbaceous vegetation communities develop into mature, late seral communities that would have the canopy cover to increase stream shading and the root mass to increase bank stability. Stream channels would narrow and deepen due to improved bank stability and sediment catchment, lowering stream temperatures. Idaho water quality standards would be met in Middle Fork Owyhee River, and its subsequent removal from the 303(d) list would be expected.

3.3.2.4 Alternative C1

Alternative C1, the BLM proposed action, would make significant progress toward meeting Standard 7 in the long term (5-10 years). Effects to water quality are similar to those identified

in the spring grazing portion of Alternative B; the incorporation of rest and deferment would result in increased upland and riparian vegetation growth, vigor, and cover, thereby improving water quality.

Direct and indirect effects from grazing management:
Water quality effects due to the proposed changes in grazing management and range projects are closely tied with riparian vegetation conditions, as described in Section 3.4.2.4. The effects are similar to those described in Alternative B spring season of use. Even with the higher proposed stocking rate, the rest provided from the grazing system (minimum of five out of ten years) and spring season of use would improve riparian vegetation (see Section 3.4.2.4) in the short-term on all springs and streams. As riparian vegetation condition improves and streambank stabilize, sedimentation, turbidity, and stream temperatures are expected to decrease in the long term. Stream channel morphology would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease and stream shading levels increase due to the development of dense and vigorous riparian plant communities. In the long term, Idaho water quality standards would be met in Middle Fork Owyhee River and its subsequent removal from the 303(d) list would be expected.

Effects from livestock trailing are the same as those described in Alternative A1.

Water quality effects due to the proposed range projects are the same as those identified in Alternative B.

Direct and indirect effects from juniper management:
Effects to water quality are the same as those identified in Alternative B.

3.3.2.5 Alternative C2

Effects from grazing, trailing, and range projects to water quality are similar to those identified in Alternative C1. This alternative would make significant progress towards meeting Standard 7 in the long term (5-10 years). Improved stream temperatures and decreased stream sedimentation due to increased upland and riparian vegetation growth, vigor, cover, and fewer streambank impacts would likely occur faster and to a greater magnitude than in Alternative C1 because of the much lower AUMs (535 compared to 1029 in Alternative C1).

Direct and indirect effects from juniper management:
Effects to water quality are the same as those identified in Alternative B.

3.3.2.6 Alternative D

Alternative D, the ten year extended rest alternative, would make significant progress toward meeting Standard 7 in the long term (5-10 years). Effects from ten years rest from livestock grazing, coupled with juniper treatments, would make progress toward meeting Standard 7 faster than Alternatives A1 through C1.

Direct and indirect effects from grazing management:
Water quality is closely tied to riparian conditions, and with the expected improvement in riparian conditions in all pastures, all streams would meet IDEQ water quality standards. Riparian conditions in all pastures are expected to improve due to no livestock grazing. Reductions in stream temperature and sediment would occur as the willow and herbaceous vegetation communities develop into mature, late-seral communities that would have the canopy cover to increase stream shading and the root mass to increase bank stability. In the long term, stream channels would narrow and deepen due to improved bank stability, also enhancing stream temperatures. Idaho water quality standards would be met in Middle Fork Owyhee River, and its subsequent removal from the 303(d) list would be expected.

The effects from the Horsehead and Big Willow Spring projects on water quality resources are the same as those identified in Alternative B.

Direct and indirect effects from juniper management:
Effects to water quality are the same as those identified in Alternative B.

3.4 Wetlands/Riparian Areas

3.4.1 Affected Environment – Wetlands/Riparian Areas

About 31 miles of perennial and intermittent streams are in the Pole Creek Allotment. Major drainages include the Middle Fork Owyhee River and its tributaries, Pole Creek, and Squaw Creek and its tributaries. Pole Creek is a tributary to the Middle Fork Owyhee River and Squaw Creek is a tributary to the North Fork Owyhee River. The majority of the streams in the allotment have perennial surface flows, with approximately 15 miles of stream with intermittent surface flows (Map 9).

The 2012 Pole Creek Evaluation and Determination identified that Standards 2 (Riparian Areas and Wetlands) and 3 (Stream Channel/Floodplain) are not meeting and livestock grazing practices are a significant factor. Riparian areas accessible to livestock are likely negatively affected by heavy utilization and/or streambank/wetland physical disturbance. Conversely, areas that are livestock inaccessible due to fencing or terrain are usually meeting Standards 2 and 3.

Lotic proper functioning condition assessments (USDI-BLM 1998) conducted from 1996-2000 assessed 31 miles of streams in the allotment. Of the 31 miles, 36% (11 miles) were in proper functioning condition (PFC), primarily segments of the Middle Fork Owyhee River, and Pole and Squaw creeks that were within rocky or steep canyons that restrict livestock access. Riparian areas in proper functioning condition are generally vegetated with diverse shrub communities dominated by alder, willows, redtwig dogwood, Wood's rose, golden current and chokecherry. Approximately 64% (20 miles) of streams were assessed functional-at-risk (FAR) or nonfunctional condition (NF). Riparian shrubs and late-seral herbaceous species (sedges and rushes) were entirely absent or present in very low numbers on these stream reaches, such that riparian vegetation is inadequate to stabilize streambanks and channels. Functional at risk stream reaches are often laterally unstable, with the stream channel wide and shallow relative to that of

the landscape setting. In general, streambanks do not have sufficient deep-rooted riparian vegetation to resist the erosive forces of high stream flows on these stream segments. Streambanks are also physically altered by livestock shearing and trampling of streamside vegetation and soils.

Proper functioning condition assessments were conducted on Peach Creek (three reaches) and Middle Fork Owyhee River (six reaches) in 2006 (Map 11). Assessed reaches' conditions did not improve from the 1996-2000 assessments. Two reaches of Peach Creek were assessed as FAR toward the low end of the functioning condition scale and one reach was assessed as NF. The FAR reaches had bank shearing and alterations due to hoof impacts. Herbaceous riparian vegetation, where present, was heavily used. The NF reach was no longer lotic (no running water) and consists of three or four seeps near the channel with mostly non-hydric grass and grass-like herbaceous plants along the channel. The area was heavily used, and a headcut was present near the confluence of Peach Creek and its tributary (Peach Creek T1).

The Middle Fork Owyhee River reaches were assessed FAR with no apparent trend. The western most reach (Map 11) was assessed FAR toward the low end of the functioning condition scale due to several active cut-banks that were not stabilized by vegetation. Upstream, the reach appeared inaccessible to livestock (as it did in the 1998-2000 assessments) and is likely functioning properly. The remaining five assessments for upstream reaches were assessed FAR due to the presence of many cut banks, bank sloughing, exposed roots on willows, and heavy browsing on young willows.

In addition to lotic PFC assessments, multiple indicator monitoring (MIM)(USDI-BLM 2008b) occurred on three stream reaches in 2006 and results are presented in Table WR1. Results from the 2006 MIM data affirm 1996-2000 PFC assessment results. The data indicate heavy riparian vegetation use (both herbaceous and when present, woody), and streambank trampling, leading to decreased streambank stability.

Table WR1. Middle Fork Owyhee River, Squaw Creek and Scott Spring Creek multiple indicator monitoring[1] results taken in 2006.

Water Body	Median Stubble Height (inches)	Streambank Alteration (%)	Woody Use (%)	Stable Streambank (%)	Covered Streambank (%)	Ecological Status	Wetland Site Rating
Middle Fork Owyhee River	2.5	55±8	NA[2]	9	11	Very Early	Very Poor
Squaw Creek	2.0	9±4	83±7	48	48	Early	Poor
Scott Spring Creek	3.5	58±8	NA[2]	21	38	Very Early	Very Poor

[1]Multiple indicator monitoring was performed as identified in BLM Technical Reference 1737-23.
[2]NA: Not measured due to lack of willows or woody vegetation encountered in the monitoring reach.

Riparian Greenline data (Winward 2000) was gathered in 2004 on five reaches (Map 11) and report similar results as the 1996-2000 and 2006 lotic PFC assessments and the 2006 MIMs: high streambank alterations, low herbaceous stubble height, and low streambank stability.

Since 2008, riparian herbaceous stubble height, riparian woody browse, and streambank alterations were monitored/calculated on seven stream reaches twice a grazing season: once at midpoint of grazing and again two weeks after livestock were removed, as per stipulated agreement (see Section 2.4.1 for details). Results from the stubble height and streambank alterations at midpoint of grazing are presented in Figures WR1 and WR2. Monitoring locations are identified on Map 11. Though several reaches met or surpassed the four inch stubble height requirement during some years, the streambank alteration criterion was seldom met.

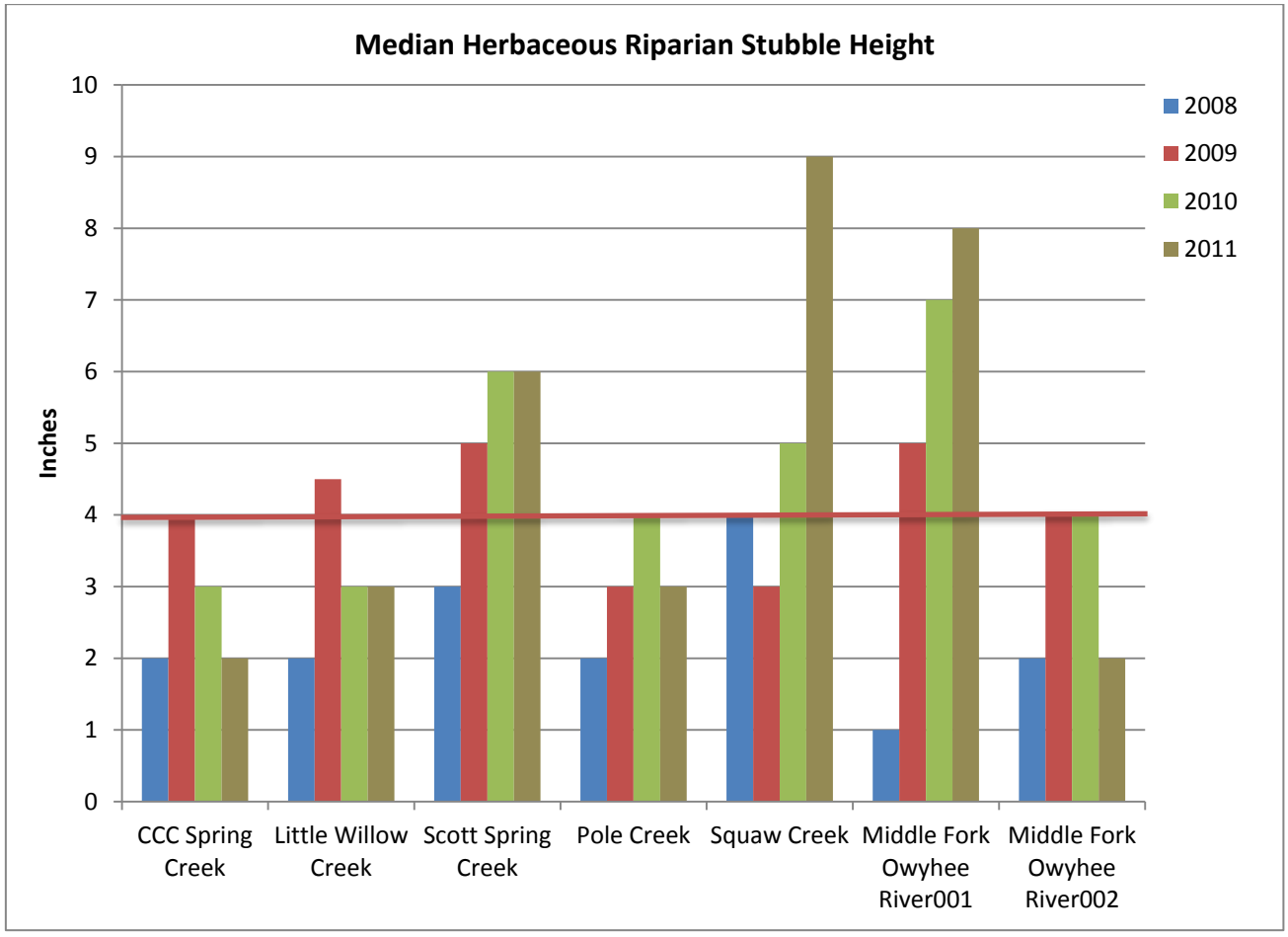
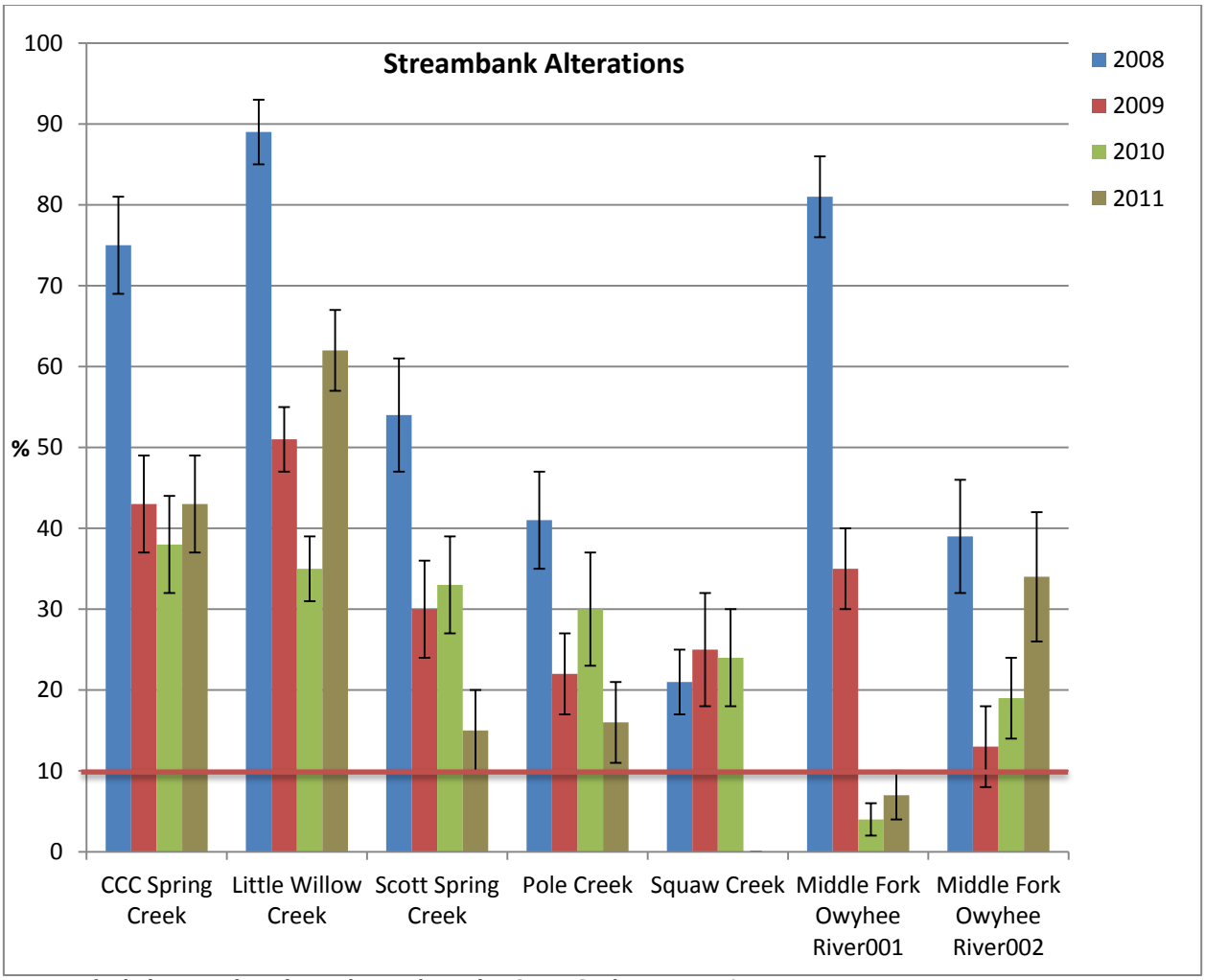


Figure WR1. Median stubble height of herbaceous riparian plants on various stream reaches measured during midpoint of livestock grazing on the Pole Creek Allotment.



*No streambank alterations due to livestock were observed on Squaw Creek transect in 2011.

Figure WR2. Percent streambank alterations on various stream reaches measured during livestock grazing on the Pole Creek Allotment. Bars represent 95% confidence intervals.

Results from the 2008-2011 woody browse monitoring indicate low utilization. Only two reaches, Squaw Creek and Middle Fork Owyhee 001 had willows appropriate (as identified in TR 1737-23) to monitor, and browse ranged from 2.6 ± 6% to 17.8 ± 4% for four years and never approached the 50% use criteria from the 2008 Stipulated Agreement.

Monitoring results (stubble height, woody browse, and bank alteration) from two weeks after livestock were removed were similar to mid-grazing season counterparts, and identified heavy use in riparian areas.

Approximately thirty springs (NHD 2010) occur on public lands within the allotment (Map 9). Eleven lentic PFC assessments (USDI-BLM 1999c) were performed in 2006. Four of the five assessments on developed and fenced springs were assessed PFC. Horsehead Spring, the developed spring, was assessed NF due to the lack of water and riparian vegetation. Additionally, observations from BLM personnel made in 2009 indicate that Horsehead Spring

(the fenced area) has had unauthorized heavy equipment digging in and moving soil around the springhead, in an unsuccessful attempt to unblock or "fix" the spring. This was also done to a lesser extent on Big Willow Spring (within the fence). The five non-fenced springs were assessed FAR due to heavy to moderate hoof action in and around wetland and decreased riparian vegetation and/or reduced vigor.

The Dutcher Springs Pasture has no known springs on public lands. Additionally, from 1996-2000 PFC assessments and 2010 BLM personnel observations, livestock access to Squaw Creek from Dutcher Springs Pasture is unlikely due to steep canyon walls.

3.4.2 Environmental Consequences – Wetlands/Riparian Areas

3.4.2.1 Alternative A1

Continuation of the current situation would not make significant progress toward meeting Standards 2 and 3. Continuation of hot season grazing would concentrate livestock use on riparian areas, thus increasing riparian vegetation use and streambank trampling to unacceptable levels. Even at modest AUMs of 892, the timing of use associated with Alternative A1 is problematic. Juniper encroachment would continue, and slowly change the hydrology of the area by increasing surface runoff and associated sediment input into the stream channels.

Direct and indirect effects from grazing management:
Heavy riparian vegetation utilization and associated streambank damage due to livestock grazing would likely continue under current management. Even with lower AUMs (than Alternative A2) and following the 2008 Stipulated Settlement Agreement, continued hot season use would result in heavy riparian vegetation utilization and associated streambank damage similar to what was previously identified in riparian monitoring (see Figures WR1 and WR2). These effects would likely continue with no change in grazing management. This level and season of use would continue to jeopardize the streams' functioning condition by decreasing their ability to slow spring flows due insufficient riparian vegetation, and increasing the channels' width to depth ratios due to insufficient riparian vegetation and increased streambank hoof alterations. This would occur allotment-wide over both the short and long terms (10 and 20+ years, respectively). This grazing system would not make significant progress toward meeting Standards 2 and 3.

Map 10 identifies stream reaches that would meet Standards 2 and 3 due to their previous assessments as PFC and their inaccessibility to livestock. Reaches include: 2.0 mile reach of Middle Fork Owyhee River, 1.9 mile reach of Squaw Creek, and 1.7 mile reach of Pole Creek. These areas are in steep canyons that limit livestock accessibility and due to their geomorphology and riparian woody populations, are not likely to be affected by livestock grazing.

Lentic areas accessible to livestock would not improve under the current grazing system due to hot season of use, continued level of use, and trampling by livestock. Livestock tend to congregate in riparian areas during hot season/summer grazing schedule (USDI-BLM 2006, Parsons et al. 2003). Heavy herbaceous riparian plant use and bank alterations would be expected. Heavy use would decrease plant vigor and reproduction, and move the plant

community to more grazing tolerant species. Increased hoof impacts break up concentrated mats of hydric vegetation, exposing sediment, and create small islands of hydric vegetation throughout the wetland. Plant communities in these areas tend to change from hydric species to facultative wetland to xeric upland species because the islands are elevated and drier than they were previously. Long-term effects from heavy use in riparian areas would deteriorate wetland functioning conditions from FAR to eventually NF. These areas would not meet Standard 2 in the short or long term.

Livestock trailing through the allotment would have little to no effects on wetland and riparian areas due to duration (up to four days) of the trailing and distance from wetlands and riparian areas. Specifically, no livestock trailing is planned to occur near (within 0.25 mile) a riparian area on public lands.

Effects of not treating the expanding juniper:
Juniper encroachment would continue, increasing water runoff and the potential for accelerated soil erosion. As juniper increases, the juniper-dominated hill slopes would have lower herbaceous plants and litter cover, and would produce rapid runoff even from low-intensity rainfall events (Pierson et al. 2007). With current poor riparian conditions on the majority of the streams, there would be little buffering capability, and sediment and overland flow could enter stream systems. In some of the stream systems, rapid runoff, coupled with unstable streambanks and the general lack of deep-rooted riparian plants, would cause channel widening or incision to the point where little soil is left in the riparian areas.

3.4.2.2 Alternative A2

Effects to wetlands and riparian areas from livestock grazing, trailing, and continued juniper expansion are the same as those identified in Alternative A1. Effects (increased riparian vegetation use and streambank trampling) would likely occur to a greater magnitude than in Alternative A1 because livestock would stay on pasture for the entire grazing term, increasing livestock duration and hot season use in riparian areas.

3.4.2.3 Alternative B

Alternative B, the adaptive management alternative, would make significant progress toward meeting Standards 2 and 3. Spring season of use and the flexibility of adaptive management would improve livestock distribution and utilization compared to Alternatives A1 and A2, and allow for changes in management, thus improving riparian vegetation and channel morphology. Treating juniper as per prescription would likely lead to increased spring flows, groundwater, and soil moisture, and would potentially expand lotic and lentic areas.

Direct and indirect effects from grazing management:
In the spring grazing system, riparian vegetation conditions would improve because livestock would tend to spend more time in the uplands due to similar or better forage quality (USDI-BLM 2006, Clary and Webster 1989). Consequently, less livestock in the riparian areas should equate to lower riparian vegetation utilization and less streambank alterations in the short term (< 5 years). Livestock would be removed from the allotment by June 30th, giving three (possibly four) months of riparian vegetation recovery. A study by Boyd and Svejcar (2004) investigated

the relationship between timing and height of clipped herbaceous riparian plants and regrowth and found that a two inch riparian stubble height clipped in June produced four to six-inch stubble heights in October, and typically fulfilled federal stubble height requirements. Additionally, pasture rest associated with juniper treatments in Scott Spring and Pole Creek Breaks would allow for three consecutive growing seasons of herbaceous and woody riparian vegetation growth and development and streambank unabated by livestock grazing.

In the long term (>10 years), the early-seral dominated riparian vegetation communities would eventually change to communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks would stabilize due to deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities. Long-term effects would likely be similar to those identified in a ten year riparian grazing study by Clary (1999) due to their similarities in spring grazing schedule. Clary found that the overall fluvial and vegetative response improved with medium grazing (35-50% utilization) during late June; stream channels narrowed, stream width-depth ratios were reduced, and channel bottom embeddedness decreased. Also, streambank stability increased and streamside willow communities increased in both height and cover. Clary recommended spring/early summer grazing with 10-15cm (4-6 inch) stubble height at the end of the growing season for meadow riparian recovery (Clary 1999). A minimum four-inch riparian stubble height (where appropriate) is expected for the Pole Creek Allotment streams.

Herbaceous riparian vegetation conditions in all pastures would improve compared to Alternatives A1 and A2 due to fall season of use and reduced stocking rates. Herbaceous riparian vegetation is typically less likely to be overgrazed in the fall because of cooler air temperatures, livestock water demands tend to be lower, and may shift use to the uplands. Due to fall season of use and the higher elevation (approximately 6,100 feet) of the area, livestock would tend to leave riparian areas for uplands because the air temperature in riparian areas tends to be colder than in the uplands. Less time in the riparian areas would equate to less streambank damage due to hoof impacts and decreased utilization of riparian vegetation. Pasture rest associated with juniper treatments would aid in riparian vegetation health, vigor, reproduction and establishment along with reducing potential streambank damage.

However, if adaptive management shifts to a fall season of use, there are some inherent risks such as riparian vegetation cannot recover from grazing before high spring flows, and increased likelihood of heavy browse on woody riparian species (USDI-BLM 2006, Evans et al. 2004, Pelster et al. 2004). Sufficient riparian vegetation is necessary to slow flows and protect streambanks from erosion. Heavy willow utilization due to fall season of use can slow recruitment, reduce vigor, and degrade willow stands to sedge communities or worse (Kovalchik and Elmore 1992). Additional rest associated with juniper treatments would lessen the grazing pressure on herbaceous vegetation and riparian shrubs. However, monitoring and subsequent changes that would be made to grazing management based off of the annual indicators would minimize these risks. Long-term effects would be similar to those previously identified for

spring grazing, except at a lesser magnitude. Improvements in willow communities would occur slower than in the spring, and would likely be realized in the long term.

The proposed range improvement projects would directly and indirectly improve riparian vegetation conditions. Expanding spring exclosures on Little Willow and Big Willow Springs, along with creating exclosures on CCC Springs and Middle Fork Owyhee River would protect the integrity of the current riparian vegetation community while allowing that community to expand and grow. Gap fences on Little Willow Spring drainage and Scott Spring Creek and Middle Fork Owyhee River would restrict livestock access through these drainages and ultimately to the Middle Fork Owyhee River. Lotic conditions in these areas would be expected to improve immediately, unhindered from livestock grazing. Pasture division fences would improve livestock management and distribution by limiting where the livestock can travel to and prevent unauthorized use from outside the allotment. Re-contouring the hole in Horsehead Spring and the trench in Big Willow Spring would decrease water draining from the wetlands, improving their function.

Effects from livestock trailing are the same as those identified in Alternative A1.

Direct and indirect effects from juniper management:
The proposed juniper treatment (girdling, cutting, burning) would impact riparian resources in a variety of ways. In the short term (the spring immediately following fire), there is potential for excessive erosion and sedimentation in the streams due to loss of juniper canopy cover and fire-induced/natural water repellency (Miller et al. 2005). The erosion would be most evident on steeper sloped terrain. There is a possibility of temporarily losing woody riparian shrub cover in lentic and lotic areas due to burning. Due to potential loss of streambank-binding riparian vegetation, some stream channels are at-risk for widening and/or down cutting from a high intensity storm event (estimated 10-20 year storm event). Streams at risk of this erosional hazard are on a higher gradient, have highly erodible soils absent of rock armor, and are dependent on riparian vegetation for streambank stabilization. Even under typical precipitation, some rilling on denuded soils on steeper slopes would be expected. Although Squaw Creek is not prescribed for burning, its location in a steep canyon would make the stream reach a deposition point for any erosion from the juniper treatments of the surrounding areas.

Long-term (5-10 years) effects of the proposed juniper treatment would be an overall, potential decrease in erosion, and increase in spring flows and groundwater storage. With the expected increase in herbaceous vegetation and ground cover after juniper treatment, erosion potential would decrease in the treated areas (Miller et al. 2005). This change in cover and vegetation density would alter the area hydrology, likely at a small scale, and retain much of the overland flow and increase infiltration. Woody riparian shrubs, such as willow, if removed by fire, should re-sprout from roots, crowns and basal stems (Anderson 2006). Common riparian shrub species that could be affected are Booth, Geyers, coyote, and whiplash willows; chokecherry; dogwood; alder; and aspen. Disagreement exists about the effects of juniper removal on a watershed's water budget. Miller et al. (2005) suggest current research has not linked juniper control and increased spring flows, and that the relationship between juniper and subsurface flow is site-specific, determined by topography, soils, geology, and precipitation amount. However,

research from Deboodt el al. (2009) suggests that removal of post-European aged juniper changed the water balance equation in an Oregon watershed. Specifically, spring flow, groundwater, and soil moisture all increased compared to pre-treatment levels (Deboodt el al. 2009). The headwaters of many streams are located in or near the Pole Creek Allotment. That fact, coupled with information from the above researchers, indicates the water balance in Pole Creek Allotment may change and increase spring flow, groundwater, and soil moisture due to the proposed juniper management. This would potentially expand lotic and lentic areas. Riparian areas throughout the Pole Creek Allotment would be affected, though the perennial streams and lentic areas would likely benefit more due to their potential linkage to groundwater.

3.4.2.4 Alternative C1

Alternative C1 would make significant progress toward meeting Standards 2 and 3. Effects to riparian vegetation and channel morphology are similar to those identified in the spring grazing portion of Alternative B; the incorporation of rest and deferment would result in increased riparian vegetation growth, vigor, cover, and less streambank alterations.

Direct and indirect effects from grazing management:
Effects (short and long-term) to riparian vegetation (lotic and lentic) and stream channels would be similar to those described for spring grazing in Alterative B, but without intensive AIC monitoring and adaptive management. Additionally, livestock numbers and AUMs are less than in Alternative B, but stocking rate and days on a specific pasture are higher on the Pole Creek Breaks, Horse Flat and Scott Springs Pastures. Heavier stocking rates and longer season of use would increase herbaceous utilization, some of which would likely occur in the riparian areas. However, Pole Creek Breaks, Berry Gulch, and Horse Flat Pastures would be rested for a total of five years and Scott Spring Pasture would be rested for six years in a ten year grazing permit. Riparian vegetation growth and development should improve unabated by livestock grazing in the rest years and would minimize damages incurred during the spring grazing season (Kovalchik and Elmore 1992).

Effects from livestock trailing are the same as those identified in Alternative A1.

Effects of proposed range projects on riparian resources are the same as those identified in Alternative B.

Direct and indirect effects from juniper management:
Effects to riparian resources are the same as those identified in Alternative B.

3.4.2.5 Alternative C2

Effects from grazing, trailing, and range projects on wetland and riparian areas are the same as those identified in Alternative C1. This alternative would make significant progress towards meeting Standards 2 and 3. Increased riparian vegetation growth, vigor, cover, and less streambank alterations would likely occur faster and to a greater magnitude than in Alternative C1 because of the much lower AUMs (535 compared to 1029 in Alternative C1).

Direct and indirect effects from juniper management:
Effects to riparian resources are the same as those identified in Alternative B.

3.4.2.6 Alternative D

Alternative D, the ten year extended rest alternative, would make significant progress toward meeting Standards 2 and 3. Effects from ten years rest from livestock grazing coupled with juniper treatments would make progress toward meeting Standards 2 and 3 faster than the previous alternatives.

Direct and indirect effects from grazing management:
Effects of this alternative would be immediate increases in both herbaceous and woody riparian vegetation. Streambank damage due to hoof impacts, woody shrub use, and herbaceous stubble heights would be expected to meet all riparian objectives. All lotic and lentic resources within the allotment would be affected and their conditions would be expected to improve. In the long term, early-seral dominated riparian vegetation communities would eventually change to riparian communities dominated by late-seral, deep-rooted species. Stream channels would improve as they narrow and deepen, and streambanks stabilize due to the bank-stabilizing abilities of deep-rooted riparian vegetation. Aquatic habitat conditions would improve as channel form recovers, fine sediment levels decrease, and stream shading levels increase due to the development of dense and vigorous riparian plant communities.

The effects from the Horsehead and Big Willow Spring projects to wetland/riparian resources are the same as those identified in Alternative B.

Direct and indirect effects from juniper management:
Effects to riparian resources are the same as those identified in Alternative B.

3.5 Fish and Wildlife/Special Status Animals

3.5.1 Affected Environment – Fish and Wildlife/Special Status Animals

The Pole Creek Allotment is located within the Owyhee Uplands and Canyons and Semiarid Uplands Level IV Ecoregions of Idaho (McGrath et al. 2002). Within the allotment, these ecoregions are characterized by rolling shrub steppe uplands interrupted by low hills, rocky outcrops and precipitous river canyons. Currently, the expansion of juniper into former shrub communities has transformed much of the area into woodlands ranging from open, savanna-like conditions to dense, nearly closed canopy forest. These woodlands cover the relatively low profile flanks of the mountain and riparian areas and occur throughout the Pole Creek area along many perennial streams. Wildlife habitats within the Pole Creek Allotment include juniper woodlands, mountain shrublands, sagebrush steppe, grassland meadow complexes, riparian areas, springs and seeps, and a few small reservoirs. Upland and riparian vegetation within the allotments have been discussed in detail in Sections 3.1 and 3.4.

Many wildlife species utilize a variety of habitats in the Pole Creek Allotment. These habitats provide forage, nesting substrate, and cover for a variety of bird, mammal, amphibian, reptile, and fish species common to southwestern Idaho and the Northern Great Basin region. Although

all of the species are important members of native communities and ecosystems, most are common and have wide distributions within the allotment, state, and region. Consequently, the relationship of most of these species to the permit renewal is not discussed in the same depth as species upon which the BLM places management emphasis. Special status species, migratory birds, raptors, and species of economic interest or unique value such as big game, large predators, and fur-bearers will be discussed in greater detail.

Descriptions of the current condition of species and their habitats are based on the affected environments within this EA (see Sections 3.1 and 3.4), recent personal observations, current element occurrences in the Idaho Fish and Wildlife Information System (IDFG 2011), and consultation with local wildlife professionals. Based on the 2012 Evaluation/Determination (Appendix B) of the existing poor habitat conditions the allotment currently is not meeting Standard 8 (Threatened and Endangered Plants and Animals) for many special status animal species dependent upon upland and riparian habitats.

Special Status Animal Species

Although no Threatened and Endangered Species listed under the Endangered Species Act (ESA) occur in the allotment, several candidate species in consideration for listing were identified from the U.S. Fish and Wildlife Service's Endangered Species Program (USDI-USFWS 2010a). BLM, USFWS, and IDFG Idaho Fish and Wildlife System maintain an active interest in other special status species (SSS) that have no legal protection under the ESA. BLM special status species are: 1) species listed or proposed for listing under the ESA, and 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA (BLM Manual 6840), which are designated as BLM sensitive by the State Director(s). Special status species discussed in this document include those listed on the Idaho BLM State Sensitive Species List (including Watch List Species) (USDI-BLM 2003) for the OFO. Two bird and one amphibian species listed as candidates under the ESA, and 11 mammals, 25 birds, and one fish with special status potentially may occur within the allotment. Special status animal species, their status, and key habitat associations are summarized in Appendix I.

With the exception of a few well-studied species, current occurrence and population data for most special status animal species within the allotment are limited due to a deficiency of targeted surveys and directed research. Nevertheless, wildlife habitat for many species currently is in poor condition due to hot season, summer livestock grazing and juniper encroachment. These issues were noted as early as 1969 in the Juniper Mountain Wildlife Habitat Management Plan (JMWHP) (USDI-BLM 1969).

Although some species' populations are poorly documented, most species that are likely to occur in the allotment display broad ecological tolerance and are widely distributed throughout the Great Basin region. Candidate species will be discussed in more detail individually, while other SSS will be included in a general discussion by taxonomic groupings.

Greater Sage-grouse: On March 5, 2010 the U.S. Fish and Wildlife Service submitted a new finding to the Federal Register which found that listing the greater sage-grouse was warranted

but precluded by the need to take action on other species facing more immediate and severe extinction threats. The finding has changed the status of sage-grouse from a BLM Sensitive species to a Candidate species under the ESA. Historically, some portions of the Pole Creek Allotment provided suitable habitat for sage-grouse and supported significant populations (USDI-BLM 1969).

Generally, habitat conditions have deteriorated or been altered to some degree throughout the entire distribution of sage-grouse. This has caused local extirpations or declines in sage-grouse populations throughout their historical range and in the Pole Creek Allotment and surrounding area. Based on an interim, updated (2011) version of the Idaho Sage-grouse Habitat Planning Map, approximately 24% (5,559 acres) of the allotment is considered potential sage-grouse habitat (Map 6). However, approximately 90% (5,043 acres) of the potential sage-grouse habitat in the allotment is unsuitable due to the extensive juniper expansion in the area. Currently, only 2% (516 acres) of the allotment can be considered key sage-grouse habitat (Map 6). The Conservation Plan for Greater Sage-grouse in Idaho (ISAC 2006) identifies juniper as a serious threat to sage-grouse habitat. Based on the 2012 Evaluation/Determination, and recent field visits, sage-grouse habitat in the Pole Creek Allotment is in need of restoration through improved livestock management in riparian areas and juniper reduction.

Typically, sage-grouse in the vicinity of the allotment congregate on communal strutting grounds (i.e., leks) from April to early May. The nesting season occurs soon after, extending from May to early June. Broods remain with females for several more months as they move from early brood-rearing areas (i.e., forb- and insect-rich upland areas surrounding nest sites) to late brood-rearing and summer habitats (i.e., wet meadows and riparian areas) from June to August.

Two leks (i.e., 2O227 and 2O632) are located within five miles of the Pole Creek Allotment (Map 6), although neither occurs within the allotment boundary. Because few systematic counts have been conducted at these leks over the last 15 years, trends in lek attendance are difficult to extrapolate. The two leks, 2O227 and 2O632, were surveyed in 2010 and 2011. Strutting males were observed only at 2O227 in 2010. In 2011, no displaying males were observed at either lek. Currently, only 2O227 is considered occupied based on the presence of males observed during surveys in the last five years.

Sage-grouse use is limited to a few small areas in the northern and southern portions of the allotment (Dutcher Pasture (252 acres), Pole Creek Breaks Pasture (166 acres) and Horse Flat/Scott Spring Pastures (98 acres), respectively) (Map 6) where sagebrush habitat is still available and junipers are absent or in the early seral stages. Sage-grouse use in areas with junipers is probably limited due to the increased predation risk trees impart; trees provide perches and cover for avian and terrestrial predators. Livestock grazing in the allotment, especially in riparian areas, is also a limiting factor for sage-grouse use because excessive grazing reduces nesting and hiding cover which also increases exposure to predators.

Yellow-billed Cuckoo: Yellow-billed cuckoo (western population) is a riparian-obligate species usually found in large tracts of cottonwood and willow habitat. The majority of riparian habitat

within the allotment currently is in poor condition (see Section 3.4.1), and probably is limiting the presence of this species within the allotment. No large cottonwood stands currently occur within the allotment and it would take decades to produce suitable cuckoo habitat under ideal conditions. In addition, the majority of the perennial streams where cottonwoods could occur lack the extensive sandy floodplains mature cottonwood groves require for development. The loss of willows due to livestock grazing and juniper encroachment also has reduced suitable nesting sites. Because suitable nesting and foraging habitat does not currently occur in the allotment and the potential for the development of suitable habitat is probably low under the best conditions, yellow-billed cuckoo will not be discussed further.

Columbia Spotted Frog: Although Columbia spotted frogs have not been documented in the Pole Creek Allotment, they do occur in a number of creeks and springs in adjacent allotments. Spotted frogs are associated with slow-moving water, marshes, reservoirs and ponds. Wetland and riparian habitat degradation is the most serious threat to healthy and viable populations. Habitat for spotted frogs currently is in poor condition (see Section 3.4.1). Beaver ponds create good habitat for spotted frogs; however, loss of willows and aspen in riparian areas due to livestock grazing and juniper encroachment has reduced available food and resources for beaver.

Special Status Birds: A variety of special status bird species occur or are likely to occur within the allotment (Appendix I). The majority of species are associated with shrub steppe, grassland or riparian habitats. Brewer's sparrow, sage sparrow, and sage thrasher are heavily reliant on sagebrush steppe for nesting and foraging. Loggerhead shrike, black-throated sparrow, and green-tailed towhee are less reliant on sagebrush, but are dependent on shrubland habitat. Although juniper encroachment has lowered the habitat quality for most of these species, many are relatively common. Grassland species include long-billed curlew and grasshopper sparrow. Because grasslands are not abundant, the likelihood of occurrence of these species is quite low.

Brewer's blackbird, calliope hummingbird, and willow flycatcher typically are associated with riparian areas, and white-faced ibis and Wilson's phalarope are associated with ponds and wetlands. Properly functioning riparian and wetland areas are limited to inaccessible stream reaches and springs with exclosures (see Section 3.4.1). Because the majority of riparian and wetland areas are accessible to livestock and are in poor condition, habitat suitability for these species ranges widely within the Pole Creek Allotment. The Determination (Appendix B) indicated that riparian habitat has been heavily to severely grazed, which in conjunction with juniper expansion, has reduced herbaceous cover, vegetative structure, plant species diversity, and nesting habitat. In many areas, the current conditions of riparian habitats are not providing suitable habitat for many riparian associated bird species.

Cassin's finch, Lewis' woodpecker, and red-naped sapsucker prefer forest habitat. The juniper woodlands within the allotment provide substantial amounts of suitable habitat for these species.

Special status raptor species occurring or potentially occurring include bald eagle, golden eagle, prairie falcon, northern goshawk, ferruginous hawk, Swainson's hawk, flammulated owl, short-eared owl, and western burrowing owl. Both eagle species are afforded additional protection under the Bald and Golden Eagle Protection Act. Although bald eagles have been documented

near the allotment during winter months, their use of the area is not well known. However, bald eagle breeding within the allotment is highly improbable because of the lack of open water and nesting trees. Golden eagles and prairie falcons nest on cliffs and rocky outcrops throughout southwest Idaho. Currently, no nests of either species have been documented within the allotment. Potential nesting habitat for these species is abundant in the nearby deep canyons (i.e., East Fork Owyhee River, Deep Creek) within 5 - 15 miles of the allotment.

Prairie falcons prey on small mammals, especially ground squirrels, but a large portion of their diet also can be comprised of birds. Golden eagles, prairie falcons, ferruginous hawks, and Swainson's hawks prefer open shrub steppe, sagebrush and grassland habitats. Foraging habitat within the allotment is relatively limited for these species due to the predominance of juniper woodland habitat.

Northern goshawks prefer mixed open forest to more dense forest. At least one goshawk nest has been documented within the Pole Creek Allotment in a mature aspen stand. The expanding juniper woodlands provide suitable foraging habitat for this species.

Short-eared owl and western burrowing owl prefer open habitats. Short-eared owls are ground nesters and need adequate cover for suitable nest sites. Burrowing owls nest in burrows dug by other animals, usually badgers, and they hunt in grasslands and sagebrush steppe areas. Expansion of juniper woodlands probably has restricted the distribution of these open habitat species within the allotment. Flammulated owls prefer dense forest and probably have occupied the area recently as juniper has expanded and become thicker.

Special Status Mammals: California bighorn sheep inhabit the open canyons to the south, east, and west of the Pole Creek Allotment. Historically, bighorn sheep may have used some of the rocky canyons and steeper terrain within the Pole Creek Allotment. However, the expansion of juniper woodlands has decreased the availability of suitable open habitat and currently precludes use by this species. Because neither bighorn nor domestic sheep occur in the allotment, bighorn sheep will not be discussed further.

The pygmy rabbit is a sagebrush-obligate species that prefers tall stands of big sagebrush on deep, friable soils where they dig extensive burrow systems. Fragmentation of sagebrush habitats poses a threat to this species by isolating disjunct populations, increasing susceptibility to localized threats, and reducing gene flow among populations. Although sites with loamy soils occur throughout much of the allotments, the moderate to dense juniper woodlands that have replaced big sagebrush communities currently make these areas unsuitable pygmy rabbit habitat. However, because pygmy rabbits have been documented in the Owyhee Uplands, some pygmy rabbits may persist in areas with suitable shrub steppe habitat.

Special status bat species occurring or potentially occurring within the allotment include California myotis, fringed myotis, long-eared myotis, long-legged myotis, spotted bat, Townsend's big-eared bat, western pipistrelle, western small-footed myotis, and Yuma myotis. Although several of these species have been detected in the general area around the Pole Creek Allotment, research conducted in the juniper woodlands in the Owyhee Uplands suggest that bat

populations are not numerous and species diversity is low (Perkins and Peterson 1997). Quality day-roosting habitat (particularly caves and large, mature, live cottonwoods and snags) appears to be a limiting factor for bats in the area. Although abundant, the basalt cliffs, rock outcrops, and seral junipers found in the Pole Creek Allotment only provide marginal roosting habitat (Perkins and Peterson 1997). Because the effects of livestock grazing on bats are not well known, and old growth junipers would remain the most abundant day roost substrates in the area, effects to bats are expected to be negligible and will not be discussed further.

Special Status Fish: Within the Pole Creek Allotment, Columbia River redband trout have been documented in the Middle Fork Owyhee River, Squaw Creek, Pole Creek, Scott Springs Creek, Granite Springs Creek, Peach Creek, and Dutcher Creek (Map 12). This trout is the resident form of steelhead trout that historically returned from the ocean to spawn in streams throughout the Owyhee River watershed (now restricted by downstream dams). Overall, habitat for redband trout is degraded due to grazing effects in riparian areas and juniper encroachment (see Section 3.4.1). In addition, fish and fish habitat downstream of the Pole Creek Allotment are affected by activities taking place upstream.

Migratory Birds, Raptors and other Birds

The Pole Creek Allotment is dominated by juniper woodlands. Mountain big sagebrush, low sagebrush, and mountain shrub communities with inclusions of grasslands, riparian areas, and aspen comprise the remaining wildlife habitat types. A variety of migratory birds fulfill nesting requirements within these habitats from late-April to mid-July and/or during spring and fall migrations. While some migratory bird species utilize a wide variety of habitats, others are more specialized. Several species can successfully nest and raise multiple broods during a single breeding season if suitable conditions exist. Migratory bird species of special conservation value and interest that have been documented or probably spend some portion of their life cycle in the allotment are identified in Appendix J.

Bird species that utilize woodlands have benefitted from the recent expansion of juniper across thousands of acres of the Owyhee Uplands. Nevertheless, no bird species are considered juniper-obligates, and generally, as juniper densities increase, species diversity decreases (Miller et al. 2005).

Grasslands and shrub steppe provide nesting and foraging habitat for the majority of migratory bird species within the allotment. Most of these ground nesting or shrub-dependent species rely on the vegetative structure and cover found in these habitat types for successful breeding. Birds that prefer grassland and shrub steppe habitat have been adversely affected due to reduced native perennial grass and forb cover, vegetative structure, and suitable nest sites, and an increase of non-native grasses and juniper (Appendix B). Lower than expected species diversity and population size of some bird species may be the result of the current habitat conditions. Among birds, grassland and shrubland species are declining faster than any other group of species in North America (Dobkin and Sauder 2004).

Healthy riparian areas are important migratory bird habitats that support high densities of breeding birds (Mosconi and Hutto 1982). In Idaho, 60% of migratory landbirds are associated

with riparian habitats (IDFG 1992). In general, breeding and foraging habitats for migratory birds are in a deteriorated condition based on evaluation of the Standards 2, 4, and 8 (Appendix B), and riparian data collected since 2001. Current habitat conditions are due to hot season grazing and juniper expansion.

In addition to special status raptors, other raptor species that have been documented or that may occur in the allotment include American kestrel, Cooper's hawk, northern harrier, red-tailed hawk, and sharp-shinned hawk. Other owls that may occur in the area include great horned owl, long-eared owl, northern saw-whet owl, and western screech owl.

The juniper woodlands, rock outcrops, and shrub steppe located within the allotment provide nesting and foraging substrate for many of these species. Generally, raptors return to areas in which they have nested in the past, often using the same nesting territories. Nesting activities may be initiated in mid-February to late April depending upon species. Nest occupation continues until chicks are fledged, which usually occurs from early June to mid-August. Raptor nesting is expected to occur in suitable habitats within the allotment.

The accipiter species, Cooper's hawk and sharp-shinned hawk, and most owls prefer mixed open forest to more dense forest. In semiarid areas, these species often focus hunting efforts in riparian areas due to the abundance of prey found there. Juniper woodlands also provide suitable foraging habitat. Accipiters primarily prey upon birds but also will take small mammals. The remaining species listed above prefer open woodland or shrub steppe to dense forest. American kestrel, northern harrier, and red-tailed hawk usually are found in more open areas such as sagebrush steppe, meadows, or open riparian areas and prey on a wide variety of small mammals, reptiles, and birds. Northern harriers are ground nesters and need adequate cover for suitable nest sites.

Big Game and other Mammals

The allotment has long supported populations of a wide variety of big game species. Rocky Mountain elk and mule deer use the Pole Creek Allotment during spring, summer, and fall (Map 12). Although elk probably migrate to lower elevations in Oregon for winter, the Pole Creek Allotment is also classified as winter range. Habitat for big game in the allotment has been affected and reduced due to heavy utilization (particularly browse) by livestock and encroachment of western juniper. This issue was identified in the JMWHP (USDI-BLM 1969) and has led to reduced numbers of deer. Declining populations have been inferred from declining hunter harvest numbers.

During aerial surveys conducted in May 2008 and December 2009, IDFG biologists observed several hundred deer and 200 elk, respectively, in the recently burned Crutcher Fire area (Powell 2009). The Crutcher Fire area now provides healthy and productive grassland habitat for deer and elk. The habitat conditions in the Crutcher Fire area are probably representative of the historic condition of the entire Juniper Mountain area.

Pronghorn probably used the entire Juniper Mountain area when vegetation consisted mainly of open grassland and shrubs. Currently, pronghorn use has been reduced in Phase 2 and Phase 3

juniper woodlands. Spring/summer/fall range occurs in the Dutcher and Berry Gulch Pastures in the northern and southern portions of the allotment (Map 12). Even though population declines were being noted in the JMWHP (USDI-BLM 1969), pronghorn were more plentiful in the past. The plan documents degraded range conditions and competition for forage as the reasons for pronghorn decline.

Habitat for deer and elk is in a deteriorated condition (Appendix B). Elk use was identified as minimal in the 1969 plan, but has been increasing due to greater levels of suitable cover provided by juniper. While juniper does provide hiding and thermal cover for elk and deer, juniper encroachment reduces forage and habitat diversity. Browse species important to deer such as mountain big sagebrush, mountain mahogany, and bitterbrush have decreased because of juniper encroachment.

Large predators that occur within the allotment include bobcat, coyote, and mountain lion. These predators are quite secretive and elusive. Because of their secretive nature, predator densities are difficult to determine. However, predators are closely tied to their prey and if prey numbers are low, predator numbers would reflect that. Predator numbers probably are reduced due to degraded habitat conditions and reduced numbers of prey. Nevertheless, because abundant habitat exists adjacent to the allotment in the surrounding canyonlands and throughout the region, these species are relatively common in the region and will not be discussed further.

Beavers are not as widespread throughout the area as they once were. The JMWHP (USDI-BLM 1969) identified that limited populations were present along some of the streams (e.g., Stoneman Creek) although habitat along many of the streams had deteriorated to the point that only remnant populations remained. Habitat for beavers in the Pole Creek Allotment has been affected from livestock use and encroachment of juniper. Loss of aspen, cottonwood, and willow has affected beaver by reducing suitable forage and material for building dams to create pond habitat. The loss of beavers throughout much of the area is suspected of leading to declines in spotted frog numbers. Other common fur-bearing animals including badger, fox, muskrat, otter, raccoon, skunk, and weasel are widespread and relatively common in the region and will not be discussed further.

Fisheries

Other fish species that occur or potentially could occur within the Pole Creek Allotment include smallmouth bass (*Micropterus dolomieui*), dace (*Rhinichthys* spp.), redside shiner (*Richardsonius bateatus*), sculpin (*Cottus* spp.) and suckers (*Catostomus* spp.; IDEQ 2002; IDFG 2009, unpublished data). Some or all of these species have a high probability of occurrence within Squaw Creek and Middle Fork Owyhee River. Fish habitat is degraded within the majority of the streams due to grazing effects in riparian areas and juniper encroachment (see Section 3.4.1). Riparian conditions and activities in the upper reaches of streams also influence fish and fish habitat downstream of the allotment boundaries.

3.5.2 Environmental Consequences – Fish and Wildlife/Special Status Animals

3.5.2.1 Alternative A1

Grazing at the current management level has been shown to reduce cover and forage for wildlife in riparian areas and lead to trampling and breakdown of streambanks (see Sections 3.4.2.1). Continuation of hot season grazing would concentrate livestock use on riparian areas, thus decreasing riparian vegetation that wildlife use for nesting substrate, cover and foraging habitat. Streambank trampling would add sediment into streams and increase channel width to depth ratios which increase water temperatures and decrease water quality to unacceptable levels for some fish and amphibian species. Juniper encroachment would continue to slowly convert shrub steppe communities to woodlands. Although slight improvements in habitat conditions are expected in upland habitats at lower elevations in the short term, significant progress toward meeting Standard 8 (special status animals) would not occur due to the continuation of degraded habitat in riparian areas and juniper expansion.

Direct and indirect effects from grazing management:

Special Status Animal Species (ESA Candidate Species only)

Greater Sage-grouse: Although some positive effects to sage-grouse from livestock grazing have been documented (e.g., vegetative growth stimulation and greater availability of food forbs with light grazing), negative effects such as trampling of eggs and subsequent nest desertion, degradation, loss, and avoidance of formerly suitable habitat caused by deteriorated wet meadow hydrology, and introduction of non-native weeds are nonetheless likely to occur (Beck and Mitchell 2000). The minimal amount of habitat for sage-grouse would continue to be affected with current management. Other effects of livestock grazing that are likely to continue include decreased brood rearing habitat due to deteriorated wet meadow hydrology. Effects would be long-term, potentially lasting for decades.

Columbia Spotted Frog: Healthy and viable populations of spotted frogs depend on properly functioning wetland and riparian areas. Habitat for spotted frogs would continue to deteriorate from loss of cover, degraded aquatic habitat, and reductions of prey items. Effects would be long-term (10 years) and riparian habitat would continue to be degraded as it has been under current management.

Migratory Birds, Raptors, and other Birds (including Special Status Species)

Birds do not generally respond to the presence of grazing livestock but to the effects on vegetation from grazing (Bock and Webb 1984). Research has shown that livestock grazing can cause a decline in habitat for bird species by altering vegetative structure and habitat complexity, reducing cover, diversity, native vegetation, and forage, and spreading weeds and undesirable annuals (Mosconi and Hutto 1982, Taylor 1986, Bock et al. 1993, RHJV 2004). The loss of canopy structure at various heights affects nesting habitat and increases the likelihood of predation and nest parasitism. The loss of grasses and forbs affects species that forage on seeds and insects. Riparian habitat would remain in a degraded condition for many bird species in the allotment. However, because slight improvements in uplands habitats are expected under Alternative A1, better nesting and foraging conditions for bird species in these habitats are expected.

Research has demonstrated that riparian area grazing has an effect on migratory bird species richness; for many species, as grazing increases, species richness decreases (Taylor 1986, Krueper et al. 2003, Earnst et al. 2005). An evaluation of the effects of moderate levels of grazing on migratory birds' breeding in riparian areas found positive effects for Brewer's blackbird and Lewis' woodpecker, negative effects for calliope hummingbird and willow flycatcher, and mixed or uncertain response by red-naped sapsucker (Bock et al. 1993). Grazing effects on riparian habitat specialists tend to be greater than on habitat generalists (Bock et al. 1993).

Raptor species that prefer forest habitat such as northern goshawk and flammulated owl would benefit from increasing juniper, until expansion resulted in a decrease in prey numbers. Effects of grazing to raptors would mainly result from effects to habitat of prey species. Conditions for prey species in upland habitats should slightly improve which should increase their numbers in the short (<5 years) and long (>10 years) term. However, prey species found in riparian areas most likely would decline as these areas deteriorate from continuation of adverse effects of heavy and prolonged livestock use. Reduced numbers of prey can influence reproductive efforts and success of raptors. For instance, golden eagles lay fewer eggs or do not breed during years when jackrabbit numbers are low and lay more eggs and produce more young when jackrabbit numbers are high (Steenhof et al. 1997). Livestock may disturb or trample ground nests of northern harriers and short-eared owls. Burrowing owls might be disturbed by cattle, but their nests are protected from trampling by being deep in burrows.

Big Game and other Mammals (including Special Status Species)
In general, livestock grazing is a competitive action with other herbivores throughout the allotment that reduces available forage and reduces cover and habitat structure needed by smaller herbivores (Medin and Clary 1989, Schulz and Leininger 1991, Hayward et al. 1997). Effects of livestock grazing on big game and mammals reduces the amounts of forage (i.e., grasses, forbs), browse (i.e., sagebrush, bitterbrush, mountain mahogany), and cover. The proposed timing and level of grazing would reduce cover in riparian areas, which are extremely important for mule deer for foraging and as fawning habitat. Population numbers for elk and deer probably have been affected to some degree by poor habitat conditions due to historic grazing practices. Because elk have the competitive advantage over mule deer, effects to deer populations probably would be greater (MDWG 2004).

Because small and medium herbivores (e.g., pygmy rabbit) play an important role in the food chain, actions that reduce numbers of these species can have cascading effects to the food web. The effects of grazing under Alternative A1 would continue habitat deterioration for many small to medium herbivores in riparian areas. However, slight improvements to upland habitats due to light use would yield benefits for small to medium herbivores in the form of greater cover and forage over the long term. Nevertheless, juniper encroachment would degrade habitat by reducing forage and suitable habitat for pygmy rabbits.

Habitat for beavers would continue to deteriorate under Alternative A1 due to effects to willows and aspen, and degradation of waterways caused by bank trampling (see Section 3.4.2.1). Loss

of understory due to juniper dominance, fire suppression, and climate factors would continue to contribute to a reduced fire frequency and promote subsequent juniper expansion into adjacent riparian areas, leading to degraded watershed conditions and reductions in aspen and willow populations. Effects would be long-term (>10 years).

Fisheries (including Special Status Species)

Heavy use of riparian areas has been shown to degrade fish habitat (US GAO 1988, Elmore and Kauffman 1994, McInnis and McIver 2009). When riparian areas are heavily utilized similar to current grazing management levels, effects to fish habitat include increased levels of surface fines, increased width to depth ratios, loss of cover, and reduced stream shading. Surface fines degrade spawning substrates and reduce reproductive success. Fines can suffocate eggs or trap newly hatched fry in the substrate. Direct effects from cattle trampling redds while eggs or fry are present may occur. Increased width to depth ratios lead to simplified channels which reduces hiding cover and leads to warmer water. Loss of overhead cover increases exposure to sunlight which also reduces hiding cover and increases water temperatures.

Habitat for redband trout and other fish species would remain in a deteriorated condition in streams within the allotment boundaries and for several miles downstream of the allotment (see Section 3.4.2.1). Bank trampling, reduced macroinvertebrate diversity and numbers, loss of desirable riparian vegetation, increased sedimentation, and reduced overhead cover would negatively affect redband trout and other fish species. Without deep-rooted riparian vegetation, streams would be more susceptible to degradation from livestock and high water events. There would be a loss of habitat complexity important for redband trout such as fewer pools, undercut banks, and woody debris. Width to depth ratios also would increase, which means streams would become wider and shallower. Wide, shallow streams provide less suitable habitat for redband trout. Juniper would increase in riparian areas leading to lowered water table, reduced groundwater recharge, and changes to nutrient cycling. Effects to redband trout and other fish species would be long-term and potentially last for more than 10 years because the degraded condition would continue through the term of the permit.

Livestock trailing through the allotment would have negligible effects on fish and wildlife. The area along the regularly maintained, wide road on which trailing would occur is already moderately disturbed from current and past use. The presence of trailing livestock for a short period (several hours) over a relatively short duration (up to four days) is not expected to measurably affect current wildlife use of the area any more than the current periodic passage of vehicles. The brief disturbance caused by trailing livestock would probably only displace a few individuals temporarily as many species of wildlife generally avoid areas within several hundred meters of roads anyhow.

Indirect effects of not treating the expanding juniper: Because no juniper treatments would occur on the allotment under Alternative A1, juniper would continue to expand across the landscape. The current level of grazing would promote the spread of juniper by reducing fine fuels and the potential for stand replacing fires. Browse species important to deer such as mountain big sagebrush, mountain mahogany, and bitterbrush have decreased substantially because of juniper encroachment. Although elk populations have increased in recent decades,

potential long-term (>10 years) population gains from increased hiding cover provided by juniper expansion is expected to be offset by a reduction in forage.

Although some species would benefit from juniper expansion (e.g., Lewis' woodpecker, flammulated owl, Cassin's finch), the continued conversion of the remaining sagebrush, mountain shrub, and shrub steppe communities would lead to decreased species diversity and loss of habitat for many sensitive species including sage-grouse, shrub-obligate and riparian-dependent migratory birds, raptors, pygmy rabbits, and redband trout. Habitat types that would be lost due to juniper encroachment include aspen, shrub steppe, sagebrush, riparian, and meadow areas.

3.5.2.2 Alternative A2

Grazing at the 1997 permit use level has been shown to reduce cover and forage for wildlife in upland and riparian areas, lead to trampling and breakdown of stream banks, lead to reduced numbers and vigor of native plant species from consumption and trampling, increase sediment into streams, and make invasive plant species better able to compete due to reduced vigor of native species (see Sections 3.1.2.2 and 3.4.2.2). Habitat conditions for wildlife and fish populations in the allotment would deteriorate in comparison to the conditions that currently exist. The short-term effects (<5 years) such as disturbance from livestock presence and loss of seasonal forage and cover would continue on an annual basis. Because improvements in habitat conditions are not expected in upland communities and degraded riparian habitats would remain, Standard 8 (special status animals) would not be met.

Direct and indirect effects from grazing management:

Special Status Animal Species (ESA Candidate Species only)

Greater Sage-grouse: Effects to sage-grouse from livestock grazing are the same as those identified in Alternative A1 with the following differences. Effects would likely occur to a greater magnitude than in Alternative A1 because livestock would stay on pasture for the entire grazing term, increasing livestock duration and hot season use in upland and riparian areas. The positive effects to sage-grouse from light livestock grazing (i.e. vegetative growth stimulation and greater availability of food forbs) appear to be neutralized or outweighed by the negative effects identified at moderate (> 50%) to severe grazing levels (Connelly et al. 2007). Negative effects of livestock grazing on sage-grouse include trampling of eggs and subsequent nest desertion, and degradation, loss, and avoidance of formerly suitable habitat caused by deteriorated wet meadow hydrology, heavily grazed meadows in poor condition, introduction of non-native weeds, and increased densities of nest-depredating ground squirrels following heavy grazing (Beck and Mitchell 2000). The utilization levels that are likely to occur in Alternative A2 (>30 – 50 %) would reduce cover and habitat (approximately 2% of the allotment) for nesting and brood rearing (Beck and Mitchell 2000, Connelly et al. 2000), and reduce native vegetation compared to Alternative A1.

Columbia Spotted Frog: Effects to spotted frogs from livestock grazing are the same as those identified in Alternative A1. Effects to spotted frog habitat would likely occur to a greater magnitude than in Alternative A1 because livestock would stay on pasture for the entire grazing term, increasing livestock duration and hot season use in riparian areas. Habitat for spotted frogs

would continue to deteriorate from loss of cover, degraded aquatic habitat, and reductions of prey items. Effects would be long-term (ten years) and riparian habitat would continue to be degraded as it had under grazing management at the 1997 grazing permit use levels.

Migratory Birds, Raptors, and other Birds (including Special Status Species)
Effects from livestock grazing are the same as those identified in Alternative A1. However, many species dependent on herbaceous ground cover for nesting and/or foraging are negatively affected by moderate to heavy levels of livestock grazing like those expected within the Pole Creek Allotment under Alternative A1(Bock et al. 1993). Habitat for most bird species in the allotment would remain in a degraded condition particularly in riparian areas. Effects of Alternative A2 include reduced cover from grasses and forbs; reduced nesting habitat; increased non-native grasses and forbs; reduced forage; simplified structural diversity; and disturbance to foraging activities.

Heavy livestock grazing, as is expected on portions of the Pole Creek Allotment under Alternative A2, has been shown to degrade sagebrush and shrub steppe habitat which is detrimental to sagebrush-obligate species (Braun et al. 1976, Paige and Ritter 1999). Specifically, heavy grazing reduces native perennial grass and forb cover, vegetative structure, suitable nest sites, and increases non-native grasses and promotes juniper expansion. Research on bird species in shrub steppe habitats found differing responses to moderate levels of grazing (Bock et al. 1993). Based on the results of this study, sensitive bird species that would be negatively affected by Alternative A2 include Brewer's sparrow, grasshopper sparrow, Swainson's hawk, short-eared owl, and burrowing owl. Brewer's blackbird, black-throated sparrow, loggerhead shrike, and sage thrashers demonstrated mixed or no responses (Bock et al. 1993). However, Bock and Webb (1984) found that some species that prefer open habitat responded positively to grazing. In the sagebrush steppe communities, several species are thought to respond positively to upland grazing at moderate levels including golden eagle and sage sparrow.

Species that use riparian as well as other open habitat types such as Brewer's blackbird and Lewis' woodpecker would probably benefit from moderate to heavy utilization. While these species are often found in riparian areas, they are not restricted to them and can be found in a wide variety of habitats.

Species preferring woodland habitat would benefit temporarily because grazing reduces fine fuels, decreases the likelihood of fire, and promotes juniper recruitment and expansion. However, as Phase 3 juniper woodlands develop, soils become drier and understory forbs, shrubs, and grasses decline, reducing suitable habitat and habitat diversity for birds (Miller et al. 2005).

Grazing effects to raptors would be similar to those identified in Alternative A1. Prey including small rodents, birds, and reptiles would decrease from loss of cover and forage under use levels expected under Alternative A2. These effects would be observed while grazing at the 1997 grazing permit use levels continues and would affect raptors that are within foraging range of the

allotment. Ground nesting raptors including northern harriers and short-eared owls would experience reduced amounts of suitable nesting cover on an annual basis from grazing.

Big Game and other Mammals (including Special Status Species)
Grazing effects to big game and other mammals would be similar to those identified in Alternative A1 with the following differences. Continued heavy levels of utilization expected under Alternative A2 would have detrimental effects to pygmy rabbits and big game species. Intensive livestock grazing on browse species can reduce critical winter food supplies for deer and elk. Grazing use levels under Alternative A2 also would increase resource partitioning and probably result in spatial displacement of deer and elk (Stewart et al. 2002).

The effects of grazing under Alternative A2 would continue habitat deterioration for many small to medium herbivores including pygmy rabbits. Heavy stocking rates similar to those expected under Alternative A2 can increase livestock trampling effects such as reduced shrub cover and collapse of pygmy rabbit burrows (Siegel Thines et al. 2004, Hagar and Lienkaemper 2007).

Fisheries (including Special Status Species)
Grazing effects to fisheries would be the same as those identified in Alternative A1 due to concentrated livestock use in riparian areas during summer.

Effects from livestock trailing are the same as those identified in Alternative A1.

Indirect effects from juniper management: Effects are the same as those identified in Alternative A1.

3.5.2.3 Alternative B

Improvements to wildlife habitat in upland and riparian areas would be realized throughout the allotment through the use of juniper treatments combined with changes in grazing management. Annual indicator monitoring and adaptive management tools would provide a mechanism and method to implement changes in grazing management, if necessary, that, in conjunction with juniper treatments, would make progress toward meeting Standards 2 (Riparian Areas and Wetlands) and 4 (Native Plant Communities) in an iterative manner. Habitat recovery would possibly occur in the short term and likely take place over the long term. Significant progress toward meeting Standard 8 (special status animals) would occur.

Direct and indirect effects from grazing management:
Special Status Animal Species (ESA Candidate Species only)
Greater Sage-grouse: Sage-grouse habitat in upland and riparian areas would improve to a greater degree compared to Alternatives A1 or A2 primarily due to a reduction and change in season of use and through the use of grazing adaptive management tools. In the short term (<5 years), potential effects to sage-grouse could include trampling of eggs, nest desertion, and reduced nesting cover during the nesting season, and competition for forbs during early brood rearing due to spring use. If upland AICs trigger the use of the herding adaptive management tool, livestock distribution is expected to improve and use throughout the allotment would be more uniform with less over-utilization in former problem areas. On average, nesting cover

would improve due to increased livestock distribution; however, the probability of egg trampling and nest desertion would also increase slightly but remain minimal.

Although grazing under Alternative B could occur during the critical growing season every year, utilization would not exceed 30%, which would allow upland vegetation to have the opportunity to recover and increase vigor. Grazing management in sage-grouse habitat should include the long-term objective of promoting desirable plant communities and the annual objective of retaining a standing crop that adequately provides cover for sage-grouse (Cagney et al. 2010). General grazing management recommendations for nesting/early brood-rearing habitat includes maintaining the sagebrush/bunchgrass plant community wherever currently present, managing for high vigor in all plant communities, avoiding repeated use of cool-season bunchgrasses during the critical growing season, and limiting utilization to moderate levels to assure that the previous year's standing crop is available for hiding cover (Cagney et al. 2010). Under this alternative, light use levels and the short duration livestock are on each pasture would promote high plant community vigor and be appropriate for providing an adequate standing crop during the subsequent nesting/early brood-rearing season.

If AICs prompt a change in season of use to fall, egg trampling, nest desertion, and reduced nesting cover would not be an issue because use would occur after the breeding season.

Columbia Spotted Frog: Spotted frog habitat is expected to improve because riparian areas and water quality would recover to a greater degree compared to Alternatives A1 or A2 (see Section 3.4.2.3). Livestock use of riparian areas is expected to be lower due to the spring season of use and livestock are expected to spend more time on the uplands compared to Alternatives A1 or A2. Direct effects to spotted frog habitat could include loss of cover, disturbed aquatic habitat, and reductions of prey items during the breeding season. If riparian AICs trigger the use of the herding adaptive management tool, livestock would be moved out of riparian areas on a regular basis which would ameliorate the adverse effects of continual and extended use in riparian areas. Because spotted frogs primarily are active from spring to sometime in fall, there would be little disturbance from livestock and management activities if riparian AICs prompt a change in season of use to fall. Spotted frogs would be able to reproduce without impacts from livestock, and probably would be hibernating before cows begin grazing.

Migratory Birds, Raptors and other Birds (including Special Status Species)
Habitat for many bird species in the allotment, especially species associated with riparian areas, would experience improvements. The benefits from the lighter stocking rate compared to Alternatives A1 or A2 would be diminished by the earlier season of use; however, bird habitats overall would improve in the long term (>10 years) due to the removal of hot season grazing. Potential effects to birds from early livestock use include reduced cover from grasses and forbs; reduced nesting habitat; simplified structural diversity; disturbance to breeding, nesting, and foraging activities; and trampling of nests. Effects to most raptors would be minimal as the territories of most species extend beyond the allotment boundaries. The early season of use would expose ground-nesting raptors to a risk of trampling. Herding would improve livestock distribution, creating more uniform use throughout the allotment, which could expose some

nesting birds to livestock disturbance in formerly underused areas. However, on average, nesting cover would improve overall.

If riparian AICs prompt a change in season of use to fall, birds would benefit from the amount of spring growth cover that would be present throughout the breeding season. In addition, cover would remain until most migratory birds had left the area when cattle grazing would begin. Habitat structure and complexity from the current season of growth would be improved. Reproductive efforts would not be disturbed by livestock or management activities. Forage would likely be more abundant and reproductive success probably would increase. However, utilization of herbaceous and browse species could affect nesting areas for some species by reducing nest-screening cover. Raptors would benefit from improved habitat conditions, fewer disturbances from livestock and associated activities, and increased levels of prey species. Raptor reproduction probably would increase over time as conditions improved across the allotment.

Big Game and other Mammals (including Special Status Species)
Habitat for big game would improve in comparison to Alternatives A1 or A2. The amount of uplands forage and cover probably would increase due to lighter stocking rates. Effects to browse species would be less because livestock would focus on grasses and forbs in the spring. Light use of riparian areas would increase cover for fawns and elk calves during spring and summer months. Riparian areas also would provide adequate forage for big game during the entire year. Riparian areas would improve (see Section 3.4.2.3), and beaver colonization would be possible in the long term (>10 years). There probably would be fewer effects from resource competition to deer and elk because there would be fewer AUMs compared to Alternative A2. Habitat conditions probably would slightly improve for several small to medium herbivores (e.g., voles, mice, pygmy rabbits, jackrabbits). Herding would improve livestock distribution, and use throughout the allotment would be more uniform which, on average, would increase cover.

If riparian AICs prompt a change in season of use to fall, herbivores would benefit from the increase in cover and forage throughout the allotment from current year's growth. Herbaceous forage would be more plentiful and cover probably would improve with current year's growth. Competition between livestock and big game for browse would be greater compared to spring use. Competition may cause displacement of big game during a time when it is important to build up winter fat reserves. Habitat conditions for small to medium herbivores such as mice, voles, pygmy rabbits, and jackrabbits would improve. Residual vegetation and spring growth would enhance cover throughout the allotment for these species, especially in riparian areas, compared to Alternatives A1/A2. There also would be more forage available from spring through late summer and reproduction and population recruitment would likely increase.

Fisheries (including Special Status Species)
Habitat for redband trout and other fish species would improve in streams because most livestock use would occur in the uplands in the spring (see Section 3.1.2.3). Potential effects to fish due to early season of use could include bank trampling, reduced macroinvertebrate diversity and numbers, loss of desirable riparian vegetation, increased sedimentation, and

reduced overhead cover. If riparian AICs trigger the use of the herding adaptive management tool, livestock would be moved out of riparian areas on a regular basis which would ameliorate the adverse effects of continual and extended use in riparian areas.

If the fall season of use was implemented, conditions for redband trout and other fish species would generally improve due to the absence of livestock during spawning. Shade and cover would improve. There probably would be an increase in stream channel characteristics including pools, undercut banks, and habitat complexity that would improve instream habitat for fish (see Section 3.4.2.3) compared to Alternatives A1/A2. Sediment levels probably would be reduced, making gravel areas more suitable for spawning and creating better habitat for macroinvertebrates. Conditions for fish populations downstream of the allotment boundaries also would improve.

Effects from livestock trailing are the same as those identified in Alternative A1.

Direct and indirect effects from proposed range improvements: Although a minimal amount of disturbance to wildlife habitat from the construction of range improvement projects is expected, effects would be short-term (<5 years) and would be offset by the long-term (>10 years) benefits accrued with the protection of spring and riparian areas, and the improved distribution of livestock within the allotment. The creation and expansion of livestock exclosures around springs is expected to provide additional habitat for many species of amphibians, birds, and small mammals. Exclosures would prevent many of the adverse effects of mechanical damage and reduction of cover due to livestock trampling and grazing. Exclosure expansion and spring rehabilitation, where proposed, would allow meadow areas and stream habitat to recover and provide improved habitat for redband trout, spotted frogs, and riparian-dependent birds.

Direct effects from the construction of fences could include removal and damage of habitat along and adjacent to fence lines, injury or mortality of wildlife species due to fence collisions, and impediments to daily or seasonal travel. In particular, the construction of the allotment/division and gap fences would pose some degree of interference to big game movements. However, improved habitat and reduced competition between cattle and big game would be realized from better distribution of livestock grazing within the allotment. Additionally, the proposed fences and cattleguard would aid in the exclusion of unauthorized livestock drifting into the allotment from adjacent lands and prevent displacement of deer and elk during periods outside of the authorized season of use. The reduction of livestock access to streams due to gap fences would allow riparian areas to recover and improve habitat for species using those areas. The removal of the Juniper Study area fence (approx. 1 mile) would eliminate movement barriers in mule deer and elk summer range and reduce the potential of injury or entanglement of wildlife.

Short-term risk of sage-grouse fence collisions would be negligible because new fence construction would not occur within currently suitable habitat. However, collision risk might increase after successful juniper treatments at various locations (i.e., Little Willow Spring Exclosure, Horse Flat Pasture Division Fence) where sage-grouse habitat would be restored.

The risk of propagation and transmission of West Nile Virus (WNV) is not expected to increase with construction of the proposed range improvements. Rehabilitation efforts at Big Willow and Horsehead Springs would fill in dug out areas which currently may provide breeding habitat for *Culex tarsalis*, the dominant vector of WNV in sagebrush habitats (Naugle et al. 2004, Doherty 2007), and likely reduce WNV risk at these sites. Neither of the aforementioned sites, nor the majority of the other developed springs occur within suitable sage-grouse habitat; therefore, WNV risk due to range improvement projects would remain negligible.

Direct and indirect effects from juniper management: Treatment of juniper would generate long-term benefits throughout the Pole Creek Allotment. Most long-term benefits would begin to be realized after 10-30 years when sagebrush begins to provide forage and cover. Effects probably would be long-term as a more natural fire regime would be introduced across the Juniper Mountain area.

Special Status Animal Species (ESA Candidate Species only)

Greater Sage-grouse: Because jackpot rather than broadcast burning would occur in most areas of Phase 1 juniper encroachment, current sage-grouse key habitat would be maintained or improved because vegetation surrounding jackpots would not be burned and burn patches would be small and confined to individual tree debris zones. Much of the Phase 2 and Phase 3 juniper woodlands would be treated with prescribed fire which would reduce juniper canopy and convert these areas to grasslands for 10-30 years until sagebrush naturally reestablished. Although the newly created grasslands would increase the area of sage-grouse habitat (albeit marginal quality) in the short term, the return of sagebrush communities would provide long-term benefits to sage-grouse by making thousands of acres of previously unsuitable habitat available for nesting and other life history phases. Although there is a slight possibility for prescribed fire to carry into adjacent sagebrush areas, suitable sage-grouse habitat is not expected to be lost. The hand girdling of junipers and use of prescribed fire could also increase available perching sites for raptor species, which appears to increase the predation risk of male sage-grouse near leks (Commons et al. 1998). However, the removal of seral juniper and the reestablishment of sagebrush in the area would greatly benefit sage-grouse populations in the long term (>10 years) by increasing the area of suitable habitat. Therefore, local sage-grouse populations are not expected to be negatively affected by proposed juniper treatments.

Columbia Spotted Frog: Little is known about the effects of fire on amphibians. The proposed burns would likely be less intense than wildfire and generally pose less of a threat to spotted frogs. Treatments occurring after September are less likely to harm this species because many individuals would already be hibernating. Russell et al. (1999) reported few fire-related injuries to herpetofauna, even though many of these species, particularly amphibians, have limited mobility. Many amphibians live in mesic habitats which are less likely to burn or would burn less severely than upland sites. The variation within burns may account for observations that fire has little effect on populations of amphibians (Ford et al. 1999). Wetlands may provide refuge from fire, and activities such as breeding by aquatic species may be carried out with little interruption (Russell et al. 1999). Juniper felling in riparian areas would likely improve spotted frog habitat by slowing stream flow and creating deeper pools. Spotted frog habitat would

benefit from the proposed removal of juniper as riparian areas would not be degraded by the negative effects of juniper encroachment. If willows and aspen become more prevalent in the area, beaver would likely return and their dams would provide excellent habitat for spotted frogs.

Vegetation is expected to recover in a similar manner to the Crutcher Fire area, which currently provides excellent habitat for many amphibian species in the area. Several tadpoles and young frogs and toads were observed by BLM personnel during the summer of 2009 at a spring-fed pond within the Crutcher Fire area. Proposed treatments and removal of juniper are expected to benefit amphibians throughout the allotment. Changes to habitat would be long-term term (>10 years), and conditions from the proposed treatments would move vegetation communities in a direction that would benefit spotted frogs.

Migratory Birds, Raptors and other Birds (including Special Status Species)
In the short term, sagebrush-dependent species could be negatively affected because relatively small mountain big sagebrush inclusions would be burned with junipers in scattered and transitional stands. Burning would reduce sagebrush and nesting habitat for sagebrush-dependent passerines for 10 to 30 years (see Section 3.1.2.3). Affected species would be forced into nearby sagebrush habitat or out of the area to adjacent available habitats. In the short term (1-9 years), the displacement could reduce productivity and species abundance within the allotment. However, due to the nearby abundance and availability of sagebrush habitats in the surrounding landscape, population reductions in the allotment would not lead to listing of any of the affected species. In the long term (10-30 years), habitat conditions would improve for these species with the reestablishment of sagebrush.

Cutting and jackpot burning in big and low sagebrush vegetation types would have minimal effect on bird species as most of the sagebrush canopy would be left intact and still useable. This level of burn could have beneficial effects for grassland species in the short term.

Removal of juniper from riparian areas would improve vegetative species composition and improve the herbaceous cover and structure for the many birds that utilize riparian habitat. Nesting and foraging habitat would be enhanced and overall productivity of riparian areas and waterways would improve over time as riparian vegetation reestablished. Habitat for sensitive bird species associated with riparian areas would improve.

Habitat for woodland species would decrease as juniper treatments are implemented, leading to a decrease in the number of individuals and potentially a reduction in woodland species diversity. Junipers are expected to remain on at least 30-50% of the project area and provide habitat for birds preferring woodland and forest habitat. Although woodland and forest birds that move to suitable habitat adjacent to the allotment could encounter increased competition for resources in those areas, reductions in overall productivity for these species would be minimal. Sensitive woodland species (Appendix I) would have habitat reduced, but not to a level that would affect overall population numbers in the Owyhee Mountains as large areas of forests and woodlands would remain in the surrounding areas.

Species such as Cooper's hawk, northern goshawk, and sharp-shinned hawk would experience a decrease in suitable habitat. In the long term (>30 years), however, the return of healthy aspen stands in treated areas would provide additional northern goshawk nesting habitat. In general, restoration of grasslands, sagebrush, shrub steppe, riparian, and aspen habitats would increase the potential productivity of the area treated and could lead to increased prey for all raptors.

With an increase in dead trees, nesting opportunities for cavity-nesting raptors such as American kestrel and flammulated owl would increase with juniper treatments, although flammulated owls prefer dense conifer habitat. Ground-nesting raptors would benefit from juniper treatments because open habitat would be restored where juniper has encroached.

Big Game and other Mammals (including Special Status Species)
Overall, the proposed juniper treatments would have beneficial effects to big game and other herbivores by creating a greater mosaic of habitat types and greater habitat diversity. Juniper would be replaced with more productive grass and shrubs, but with at least 30-50% of the juniper remaining, there would be ample cover for elk and deer. The remaining juniper would provide travel corridors and refuge from extreme weather events. Aspen stands, sagebrush, grasslands, and shrub steppe habitat would increase over time. Understory vegetation would be released providing higher quality forage for deer and elk during spring when females are in need of increased nutrition for fetus growth. The expected response by deer, elk, and pronghorn would be similar to what has been observed in the Crutcher Fire area, where IDFG biologists observed several hundred deer and 200 elk during aerial surveys conducted in May 2008 and December 2009 (Powell 2009).

Pronghorn would benefit by the creation of open habitat and increases in grasses and forbs. Cutting and jackpot burning in sagebrush vegetation types would benefit pronghorn by maintaining sagebrush which is an important part of their diet and kidding cover. Depending on the size of open habitat created and available food sources post-treatment, pronghorn may make extensive use of burned areas.

Browse species would be reduced short-term to some degree by treatments, but browse in Phase 1 juniper would largely be maintained. Much of the browse in Phase 2 and 3 juniper has been lost or is in poor condition and would be lost over time without juniper treatment. Although browse species and grasslands would be reduced by treatments, effects would be short-term (<5 years). Grasses and forbs would recover quickly while browse species would take 5-10 years to provide forage for big game species. Mule deer numbers have been shown to increase over time after a stand-replacing fire due to the increase in availability of browse (Ashcraft 1979).

Small to medium herbivores such as mice, voles, pygmy rabbits and jackrabbits would have mixed responses initially due to fire-related mortalities. However, mortality levels are expected to be low, due to the low to moderate intensity of the prescribed fire and the patchiness of the burn. Ream (1981) concluded that populations of ground squirrels, pocket gophers, and deer mice generally increased after stand-replacing fire. Deer mice appeared to respond in a positive manner relatively quickly following fire (Groves and Steenhof 1988). Habitat suitability for

pygmy rabbits would increase over time as areas formerly composed of juniper woodlands revert to big sagebrush.

Beavers would benefit from proposed juniper treatments because aspen and willow would increase in areas treated by fire or in areas where direct competition with juniper was removed by cutting. Beaver have been shown to colonize streamside habitat where fire has stimulated regrowth of aspen or willow species (Ream 1981).

Fisheries (including Special Status Species)
Juniper treatments probably would benefit redband trout and other fish species by reducing the amount of water used by junipers and increasing flows in streams (Deboodt et al. 2009). Juniper removal from riparian areas would increase exposure to sunlight until other vegetation could reestablish to provide shade. Emergent willows and aspen probably would be selected by cattle (after the post-burn rest) because they tend to utilize new growth of browse species, especially late in the season.

Rieman et al. (1997) found redband trout to be well-adapted to disturbances such as large-scale, high-intensity wildfire. The authors described fire events as "pulsed disturbance" with effects that may be considered adverse but limited in time as opposed to chronic "press" disturbance such as poorly-built roads or continuous timber harvest. The chronic nature of habitat degradation resulting from juniper expansion can be described as a press disturbance. Broadly distributed habitat within stream systems provide refuge for fish outside areas most severely affected by large pulse disturbances, and migratory behavior ensures that fish are not concentrated in small areas subject to intense effects. Results of the study indicated potential for dramatic recovery (sometimes within 1 year) from large-scale, high-intensity wildfire in which local, direct mortality was observed. Another study addressed landscape perspectives on persistence of native fish through fire events, and documented positive effects from management of habitat elements (i.e., prescribed fire for riparian and upland forest) before wildfire occurs (Dunham et al. 2003).

Effects to stream temperature would have a greater influence on fish populations as a cumulative increase occurring through time between 6th level watersheds, rather than as a limited local change from a single treatment area. Loss of juniper canopy in any treatment unit probably would contribute to elevated stream temperatures in the short term (1-3 years). Change is unlikely to be measurable in riparian areas where topography contributes the majority of shade during peak summer temperatures, the treatment area is small, or riparian shrub vegetation remains after treatment. Reestablishment of aspen and willows in riparian areas probably would attract beaver, which would build dams, providing habitat for redband trout and augmenting the recovery of degraded stream systems. Although mortalities could occur, the likelihood is very low due to the expected low intensity of the prescribed fire in the riparian areas.

3.5.2.4 Alternative C1

Effects to wildlife habitat under Alternative C1 would be similar to those identified in the spring grazing portion of Alternative B. Wildlife habitat in upland and riparian areas would improve throughout the allotment to a greater extent under Alternative C1 in comparison with

Alternatives A1 and A2 due to a change in season of use, rest, deferment, and implementation of juniper treatments. Because AUMs would be less than Alternative A2, and the season of use would be earlier, improvements to cover and forage for wildlife in upland and riparian areas (see Section 3.1.2.4 and 3.4.2.4) are expected to occur over the short and long term. Pastures would be rested every other year which has the potential to improve wildlife habitat in those years, although the heavier stocking rate and longer season of use in grazed pastures may lead to periodic decreases in cover in upland and possibly riparian habitat. Habitat recovery would occur in the short and long term and significant progress toward meeting Standard 8 (special status animals) would occur.

Direct and indirect effects from grazing management:
Special Status Animal Species (ESA Candidate Species only)
Greater Sage-grouse: Sage-grouse habitat in upland and riparian areas would improve compared to Alternative A1 because of the addition of rest and would improve compared to Alternative A2 because of rest and fewer AUMs (see Sections 3.1.2.4 and 3.4.2.4). Potential effects to sage-grouse could include trampling of eggs, nest desertion, reduced nesting cover, and competition for forbs during early brood rearing due to the early season of use in years that pastures are grazed. Late brood-rearing habitat in meadows and riparian areas are expected to improve to a greater extent than upland areas in the short term (<5 years) because livestock grazing is more likely to occur in upland habitat during spring use.

Although grazing under Alternative C1 would occur during the critical growing season and utilization is estimated to be >30% but <50% every other year, upland vegetation would have the opportunity to recover and an increase in vigor would be expected due to rest five out of ten years. Grazing management in sage-grouse habitat should include the long-term objective of promoting desirable plant communities and the annual objective of retaining a standing crop that adequately provides cover for sage-grouse (Cagney et al. 2010). General grazing management recommendations for nesting/early brood-rearing habitat includes maintaining the sagebrush/bunchgrass plant community wherever currently present, managing for high vigor in all plant communities, avoiding repeated use of cool-season bunchgrasses during the critical growing season, and limiting utilization to moderate levels to assure that the previous year's standing crop is available for hiding cover (Cagney et al. 2010). Light or moderate use levels during use years may be appropriate for providing an adequate standing crop during the subsequent nesting/early brood-rearing season depending on the frequency of use and the opportunity to regrow delivered by the grazing strategy (Cagney et al. 2010). Rest five out of ten years with moderate (~50% utilization) levels of use during use years is expected to maintain and/or improve vigor, healthy root systems, and provide adequate cover for sage-grouse in the long-term.

While livestock grazing would occur during the nesting/early brood-rearing season (3/1-6/20), only 516 acres (2%) of the 23,395 acre allotment is classified as key sage-grouse habitat. These areas would be rested five out of ten years (excluding the Dutcher Pasture) which would provide cover on grazed and ungrazed years due to residual and current year's vegetative growth. Additionally, the Dutcher Pasture would only be used as a gather field every other year from 4/16-6/30 which would amount to very little use and trampling; and used from 10/1-11/15 every

other year with a 18 acre/AUM stocking rate. Fall use would occur, but the 18 acre/AUM stocking rate should result in light utilization which would provide a large amount of residual cover for the subsequent nesting/early brood-rearing season.

Columbia Spotted Frog: Because riparian areas and water quality are expected to improve (see Section 3.4.2.4), improvements similar to those discussed for spring grazing in Alternative B are expected for spotted frog habitat.

Migratory Birds, Raptors and other Birds (including Special Status Species)
Habitat for many bird species in the allotment, especially species associated with riparian areas, would experience substantial improvements. The benefits from the rest compared to Alternative A1 would be slightly diminished by the earlier season of use; however, bird habitats overall would improve in the long term. Potential effects to birds from early livestock use include reduced cover from grasses and forbs; reduced nesting habitat; simplified structural diversity; disturbance to breeding, nesting, and foraging activities; and trampling of nests. Effects to most raptors would be minimal as the territories of most species extend beyond the allotment boundaries. The season of use would expose ground-nesting raptors to a risk of trampling.

Big Game and other Mammals (including Special Status Species)
Habitat for big game would slightly improve over current conditions. The amount of upland forage and cover probably would be similar to Alternative B in pastures in years that they are grazed, while effects to browse species would be substantially reduced due to the early season of use in comparison to Alternative A1. Early season use of riparian areas (grazed years) would slightly decrease cover for fawns and elk calves during spring months. However, riparian areas would provide adequate forage for big game during the entire year in rested pastures. Riparian areas would improve (see Section 3.4.2.4), and beaver colonization might be possible in the long term. There probably would be fewer effects compared to Alternative A2 from resource partitioning to deer and elk because there would be fewer AUMs. Habitat conditions probably would slightly improve for several small to medium herbivores (e.g., voles, mice, pygmy rabbits, jackrabbits).

Fisheries (including Special Status Species)
Habitat for redband trout and other fish species would improve in streams (see Section 3.4.2.4). Potential effects to fish due to an early and longer season of use than Alternative A1 could include bank trampling, reduced macroinvertebrate diversity and numbers, loss of desirable riparian vegetation, increased sedimentation, and reduced overhead cover. However, these effects are only expected five out of ten years, given rest associated with pasture rotation and juniper treatments.

Effects from livestock trailing are the same as those identified in Alternative A1.

Direct and indirect effects from proposed range improvements: Effects are the same as those identified in Alternative B.

Direct and indirect effects from juniper management: Effects are the same as those identified in Alternative B.

3.5.2.5 Alternative C2

Effects to fish and wildlife habitats under Alternative C2 would be similar to those identified in Alternative C1, and substantial improvements would occur due to a 40% reduction in AUMs compared to Alternative A1. Changes to grazing management in combination with juniper treatments would result in making significant progress toward Standard 8 (special status animals).

Direct and indirect effects from grazing management:
Effects to fish and wildlife habitat are the same as those identified in Alternative C1. Improvements in habitat conditions (increased cover, forage, structural diversity, and species composition, and decreased stream temperatures, sediment loads, and channel width to depth ratios; see Section 3.1.2.5 and 3.4.2.5) for all fish and wildlife species would likely occur faster and to a greater magnitude than in Alternative C1 because of the much lower AUMs.

Effects from livestock trailing are the same as those identified in Alternative A1.

Direct and indirect effects from proposed range improvements: Effects are the same as those identified in Alternative B.

Direct and indirect effects from juniper management: Effects are the same as those identified in Alternative B.

3.5.2.6 Alternative D

Extended rest in conjunction with juniper treatment would dramatically improve conditions for all species of wildlife throughout the Pole Creek Allotment. Vegetative structure and diversity, residual cover, and available forage would increase in all habitat types. Springs and stream riparian habitat would expand and improve. Disturbance from livestock and associated management activities would not occur. In general, all of the negative effects associated with grazing identified in this EA would not occur across the allotment. The effects of previous annual hot season cattle grazing would improve over time. Overall, the allotment would become much more diverse and productive as wildlife habitats improve and population numbers for most species would be expected to increase. Wildlife and aquatic objectives would be met and there would be substantial progress toward meeting Standard 8 (special status animals), although recovery of habitat could take 10 to 30 years.

Special Status Animal Species (ESA Candidate Species only)
Greater Sage-grouse: Sage-grouse would benefit from the removal of livestock from the allotment because the negative effects of livestock grazing would no longer occur to sage-grouse or their habitat. Negative effects of livestock grazing on sage-grouse include trampling of eggs and subsequent nest desertion, and degradation, loss, and avoidance of formerly suitable habitat caused by deteriorated wet meadow hydrology, heavily grazed meadows in poor condition, introduction of non-native weeds, and increased densities of nest-depredating ground squirrels

following heavy grazing (Beck and Mitchell 2000). With the removal of livestock, nesting structure and cover are expected to increase in uplands along with a similar increase of late brood-rearing habitat in meadows and riparian areas. Improved habitat would result in higher nesting success and productivity which could increase local population numbers.

Columbia Spotted Frog: Spotted frogs would benefit from the removal of livestock because riparian habitat would improve (see Section 3.4.2.6). Improvements to spotted frog habitat include increased levels of cover and shading, and lack of livestock trampling effects.

Migratory Birds, Raptors and other Birds (including Special Status Species)
Birds would benefit because of the increased productivity of all habitat types they utilize, especially riparian areas. Springs would improve and expand and streams would eventually experience widening riparian areas, resulting in increased levels of riparian habitat across the allotment. Bird diversity and numbers increase when livestock are removed from an area (Bock et al. 1993, Earnst et al. 2005). Nesting structure and cover would increase and lead to greater reproductive success and improved population numbers. Improved habitat conditions also would benefit all raptor species. Nesting conditions would improve and prey numbers would increase, leading to greater levels of successful reproduction and survival of offspring.

Big Game and other Mammals (including Special Status Species)
All big game species and herbivores would benefit from removal of livestock from the allotment. There would be more available forage for all herbivore species and increased levels of cover. Desirable plant species would increase over time. Population numbers of big game and other herbivores would be expected to increase. Livestock trampling of cover and collapse of pygmy rabbit burrows (if present) would not occur. Willow and aspen would be expected to increase across the allotment. This probably would lead to increased numbers of beaver in the area and lead to habitat improvements for many species including spotted frog and redband trout.

Fisheries (including Special Status Species)
Habitat conditions for redband trout and other fish species would improve as stream channels would not be degraded by livestock grazing. Habitat features such as pools, undercut banks, and overhead cover would increase. Vegetation would return and increase along streambanks, creating greater stabilization, which would reduce sediment inputs and lead to improved channel conditions. As habitat improves, numbers of redband trout and other fish species would increase.

Direct and indirect effects from proposed range improvements: Effects from the Horsehead and Big Willow Spring projects are the same as those identified in Alternative B.

Direct and indirect effects from juniper management: Effects are the same as those identified in Alternative B.

3.6 Botany/Special Status Plants

3.6.1 Affected Environment – Botany/Special Status Plants

No plants listed under the Endangered Species Act (1973) are known or suspected to occur within the Pole Creek Allotment (USDI-USFWS 2009). Slickspot peppergrass, *Lepidium papilliferum*, listed as threatened under the Endangered Species Act, occurs in eastern Owyhee County, but is not currently known from western Owyhee County or the Owyhee Field Office Area (USDI-USFWS 2010b). No soil types containing slickspot microsites occur in the Pole Creek Allotment. Southwest Idaho is no longer considered within the range of Ute ladies'-tresses (which was mentioned in the 2001 Assessment). Therefore, these plants will not be discussed further.

Two BLM special status plant species are known to occur within the Pole Creek Allotment. Thinleaf goldenhead (*Pyrrocoma linearis*) and harlequin calicoflower (*Downingia insignis*) are Type 3 BLM sensitive plant species, which are plants considered range-wide or state-wide imperiled with moderate endangerment. Special status plant information is based on botanical surveys conducted in the Pole Creek Allotment in 2010 and 2011, BLM records, and data on file with the Idaho Fish and Game Conservation Data Center (ICDC 2010).

Thinleaf goldenhead is a perennial in the sunflower family with flowering stems about 6-12" tall, and narrow leaves from the basal crown. It generally begins growth in March-April, flowers in May and June, sets seed in early July, and is dormant by August. It occurs in seasonally wet meadows, drainages, and springs. Its world-wide range is Owyhee County, Idaho, and Harney and Malheur Counties, Oregon (USDA-NRCS 2011, Mansfield 2010). It was found at several locations in the Horse Flat Pasture in 2010.

Harlequin calicoflower is a slender annual (2-8" tall) that grows in moist mudflats of vernal pool, pond, stream, ditch bank, or reservoir edges. It germinates in late spring to early summer, and its flowering and fruiting period follows the receding waterline through the summer. Its main distribution is northern California and adjacent Nevada, with a secondary population center in southeastern Oregon and adjacent Idaho (USDA-NRCS 2011). It was recorded from the Dutcher Pasture in 1983, but the specific site has not been relocated, and because no lentic sites are known on public lands in the Dutcher Pasture, it is unlikely that it occurs there. This occurrence was originally identified as Bacigalupi's downingia (*Downingia bacigalupii*), but the specimen was later determined to be *D. insignis.*

Botanical inventories for the Pole Creek Allotment were conducted in June through August, 2010, and August 2011, primarily at the range improvement locations. See the project file for lists of plant species identified during the surveys, and survey locations (Corbin 2010).

The Pole Creek Determination (Appendix B) indicates that Standard 8 is being met for special status plant species. Recent observations suggest that current grazing management is not significantly impacting thinleaf goldenhead occurrences, presumably because the Horse Flat Pasture is generally used after mid-July, by which time flowering is typically substantially complete and fruiting is underway. Also, this plant's growing points are at or below ground level, making it somewhat resilient to grazing and trampling effects after seed set. Observations on grazing and trampling effects on harlequin calicoflower in this allotment are lacking. It is

unknown if the population is extant, on BLM lands, or if livestock are presently having any impacts on the plants or habitat. Cattle are typically drawn to this habitat type since it is a water source. Livestock impacts to this genus have been documented elsewhere as a result of trampling when the soil was wet, although plants can apparently persist in areas subjected to some trampling, at least in the short term. Because cattle enter the Dutcher Pasture after July 1 (and usually later), there is assumed to be sufficient opportunity for a percentage of plants to set seed before being disturbed.

3.6.2 Environmental Consequences – Botany/Special Status Plants

3.6.2.1 Alternative A1

Direct and indirect effects on special status plants from grazing are related to the intensity, duration, and season of cattle use of an allotment. Alternative A1 is expected to meet Standard 8 for special status plants because of relatively low grazing intensity in the Horse Flat and Dutcher Pastures, limited duration, and season of use after thinleaf goldenhead's critical growing period.

Direct and indirect effects from grazing management:
Direct effects from grazing and trampling on harlequin calicoflower would likely occur as cattle congregate on the mudflat habitat in the heat of July and August. Trampling effects would likely be more detrimental than direct grazing, assuming that cattle generally prefer to graze grass over forbs. Trampling would dislodge a portion of individuals of these shallow-rooted plants and kill them, reducing seed set for the population. However, plants will have an opportunity to set a certain amount of seed before cattle enter the Dutcher Pasture, and with relatively light use overall, the amount of trampling is not expected to cause a decline in the health of this occurrence.

Direct effects of grazing on thinleaf goldenhead are inconsequential because cows enter the Horse Flat Pasture largely after flowering and seed set, so seed would mostly be dispersed. The plant's subterranean growing points are unlikely to be removed by grazing, and by August the plant will be dormant so leaf removal will not affect photosynthetic production for the year. Direct trampling effects would be similar, with very minor trampling impacts expected on the buried root crown, except perhaps at localized high use areas around some springs.

Indirect effects to thinleaf goldenhead habitat from Alternative A1 include a slight downward trend in perennial grasses (see Section 3.4.2.1) in seasonally wet meadows and drainages. This may have minor competitive advantages to thinleaf goldenhead. Reduction of competing cover in harlequin calicoflower habitat may also have slight advantage to this plant, but its habitat is more dependent on specific wet mudflat conditions than competition cover.

Indirect grazing effects on pollinators to special status plants may occur, specifically by trampling ground-nesting native bees (Kearns and Inouye 1997). No specific information on pollinators for these species is available.

Indirect effects on special status plants from non-native weed increase as a result of grazing may occur, particularly in high use areas such as along roads, watering sources, salt grounds, and

gathering areas. Grazing can cause weed increase by creating more bare ground (from reduced bunchgrass and biological soil crust cover) favoring weed dominance (Reisner 2011, Wicklow-Howard et al. 2003). Cattle may also carry in and disperse weed set. An increase of weeds, particularly exotic annual grasses, can negatively affect rare plants (Rosentreter 1992). The magnitude of indirect effects due to weeds from Alternative A1 is expected to be lower than other alternatives, based on the relatively low grazing use.

Trailing is not expected to have substantial effects on special status plants because impacts are likely to be limited to the road and adjacent areas, and because of the short duration of trailing.

Indirect effects from continued juniper expansion:
Without juniper treatment, the density and cover of juniper would continue to increase. Juniper increase would likely have minimal effect on thinleaf goldenhead or harlequin calicoflower habitat, since encroachment into wet or seasonally wet areas is limited. Juniper increase would continue to affect soil water and runoff (see Section 3.2.2.1), and over the long term (several decades) could reduce the hydrologic suitability of habitat for these plants.

3.6.2.2 Alternative A2

Alternative A2, continuation of previous management at relatively high use (AUMs), is not expected to meet Standard 8 for special status plants because of growing season impacts (at moderate intensity, for up to about six weeks every year) to harlequin calicoflower.

Direct and indirect effects from grazing management:
Direct effects from grazing and trampling on harlequin calicoflower would likely occur as cattle congregate on the mudflat habitat in the heat of July and August, as described in Alternative A1. However, trampling impacts would be greater under Alternative A2 than A1 because of the increased number of cattle and increased duration of time in each pasture. Because of these effects, this grazing management may cause a gradual long-term (decades) decline in the health of this occurrence.

Direct effects of grazing on thinleaf goldenhead would be as described in Alternative A1, although dormant-season trampling is likely to be higher, based on the increase in AUMs. Effects on this species would still be inconsequential because plants are dormant.

Indirect effects to special status plant habitat from changes in plant cover, pollinators, weeds, and trailing would be similar to those described in Alternative A1, except impacts would be of a somewhat greater magnitude because of the increase in animals and grazing duration.

Indirect effects from continued juniper expansion:
Indirect effects from not treating juniper would be the same as described under Alternative A1.

3.6.2.3 Alternative B

Alternative B is expected to meet Standard 8 for special status plants, based on the relatively short duration of use in the Horse Flat Pasture, relatively low grazing intensity in both Horse Flat and Dutcher Pastures, and positive hydrologic effects from juniper treatments.

Direct and indirect effects from grazing management:

Direct effects of grazing on thinleaf goldenhead are likely to occur for spring grazing during the June growing /flowering period for this species. This grazing would remove photosynthetic capability and flower heads, reducing the vigor of grazed plants and their reproductive capacity. These effects are not expected to substantially reduce the viability of the occurrences in this allotment because a relatively short (26 days) grazing period for the Horse Flat Pasture is prescribed, with relatively low intensity of grazing (as indicated by <30% utilization of key forage grasses). Grazing effects on thinleaf goldenhead may be expected to be lower than the preferred grasses, so at this level of use a relatively small percentage of individuals of this species would likely be grazed. Direct trampling effects on thinleaf goldenhead would be similarly low. Trampling may break off some flowering stems and leaves, thus reducing reproduction and photosynthesis somewhat, but effects are not expected to be substantial at this level of use because the subterranean growing point is not particularly vulnerable to trampling.

Direct effects of grazing and trampling on harlequin calicoflower are also expected for spring grazing, similar to thinleaf goldenhead. Seeds will be germinating and plants flowering during the April through June season of use, and some individuals are likely to be destroyed by trampling (more likely) and grazing (less likely, assuming grasses are generally preferred over forbs). This use would occur every year, for potentially a long season (77 days, although individual cows would be moved out of the pasture within a few days), so habitat could be repeatedly trampled every year. However, effects on the occurrence as a whole are unlikely to be substantial because overall use of this pasture is expected to be relatively light (as indicated by <30% utilization), and cows are not expected to congregate for long periods at reservoir/pond edges during the late spring/early summer use in the Dutcher Pasture, limiting the amount of disturbance to the mudflat edge. Surviving plants would be expected to set sufficient seed to maintain the occurrence after cattle leave the allotment.

If fall rather than spring grazing is used, then direct effects to thinleaf goldenhead and harlequin calicoflower would be virtually eliminated, since cattle use would occur after both plants had gone dormant. Minor trampling effects on thinleaf goldenhead would be possible, but would be unlikely to be at a level sufficient to cause a decline in the occurrence.

Indirect effects from spring or fall grazing in this alternative may include a slight increase in perennial grass cover, which may increase competition with thinleaf goldenhead or harlequin calicoflower. These effects are likely to be inconsequential, however, because thinleaf goldenhead is often found to be quite vigorous in high cover areas, and calicoflower depends more on mudflat hydrology than competition conditions. Indirect effects from changes to pollinators, weeds, and trailing would be similar to those described in Alternative A2.

Direct effects to special status plants from proposed range improvements (fence and cattle guard construction) are expected to be minor. Proposed fence locations were surveyed in 2010 or 2011. Thinleaf goldenhead occurs on or near some fence locations. One proposed fence location was adjusted to avoid thinleaf goldenhead and include most of the occurrence within the exclosure; this would eliminate grazing and trampling disturbance to these plants. Fence construction and subsequent cattle trailing may affect some individual plants within larger occurrences, but are not expected to reduce viability of any occurrence or lead toward listing for thinleaf goldenhead under the Endangered Species Act. Spring rehabilitation at Big Willow and Horsehead springs will have no effect on special status plants because none are known to occur at these springs.

Direct and indirect effects from juniper management:
Thinleaf goldenhead and harlequin calicoflower occur within planned cut/jackpot burn general areas. Juniper treatment is unlikely to have substantial direct effects on thinleaf goldenhead or harlequin calicoflower because these special status species' microhabitat is unlikely to be occupied by seral juniper, so no effects from cutting or jackpot burning of juniper are expected.

No indirect effect is expected from the reduction in juniper canopy from juniper management because these special status plants do not generally occur with seral juniper. Juniper removal has been shown to increase soil moisture (Roundy 2010). Therefore, minor indirect effects may occur from increased water availability (due to reduction of adjacent juniper) in the seasonally wet meadows, drainages, or ponds occupied by these plants.

Juniper treatment activities may produce an increase in non-native weeds such as cheatgrass and prickly lettuce, which could negatively affect rare plant habitat. Based on observations from recent wildfire in the Juniper Mountain area, these weeds are likely to be localized in previously disturbed areas, and the increase is likely to be short-lived as native perennial regain dominance (Bates et al. 2006). Thus, substantial indirect effects from an increase in weeds as a result of juniper treatment are not expected.

3.6.2.4 Alternative C1

Alternative C1 is expected to meet Standard 8 for special status plants. Negative effects on thinleaf goldenhead from a relatively long season of spring use on the Horse Flat Pasture would be offset by plants having the opportunity to recover and set seed during rest years, and by positive hydrologic effects from juniper treatment. Effects on harlequin calicoflower from spring use would likewise be tempered by alternating with deferred use in the Dutcher Pasture.

Direct and indirect effects from grazing management:
Spring grazing during the critical growing and flowering period, for 2 ½ months of use, would have direct effects on thinleaf goldenhead. This grazing would remove photosynthetic capability and flower heads, reducing the vigor of grazed plants and their reproductive capacity. Little regrowth of thinleaf goldenhead would be expected after cows are removed from the pasture (June 30). These effects would be mitigated by rest years, occurring five years out of ten for the permit period, allowing plants to recover vigor and set seed. Direct trampling effects on thinleaf goldenhead would be similar. Trampling may break off some flowering stems and leaves, thus

reducing reproduction and photosynthesis, and dislodge seedlings. Trampling effects are not expected to be substantial, because the subterranean growing point is not particularly susceptible to trampling, although seedlings would be more vulnerable.

Grazing and trampling effects to harlequin calicoflower under Alternative C1 would be the same as described under Alternative B spring use for Year 1 of the rotation and as described under Alternative B fall use for Year 2 of the rotation. Spring use would affect individuals of harlequin calicoflower, but is not expected to have substantial effects on the population. Fall use would have virtually no effect on this plant. Thus, negative effects from the years of impact would be mitigated by years of deferred use (five years out of ten), allowing undisturbed seed set on the fall use years.

Indirect effects to special status plants from grazing management are likely to be similar to those described for Alternative B; these effects include competition with perennial grasses, pollinators, and weed increases. Effects from range improvement projects and trailing would be the same as described under Alternative B.

Direct and indirect effects from juniper management:
Effects to special status plants from juniper management would be the same as described in Alternative B.

3.6.2.5 Alternative C2

Alternative C2 is expected to meet Standard 8 for special status plants. Negative effects on thinleaf goldenhead or harlequin calicoflower are expected to be low, given the very light utilization and incorporation of rest or deferred used.

Direct and indirect effects from grazing management:
Grazing and trampling effects would be similar to those described under Alternative C1 except at a considerably lower magnitude because of the reduction in animal numbers, AUMs, and days per pasture. Indirect effects to special status plants from competition with perennial grasses, pollinators, and weed increases would be similar to those described under Alternative B, except at a reduced magnitude. Effects from range improvement projects and trailing would be the same as described under Alternative B.

Direct and indirect effects from juniper management:
Effects to special status plants from juniper management would be the same as described in Alternative B.

3.6.2.6 Alternative D

Alternative D is expected to meet Standard 8 for special status plants because the combination of juniper treatments and rest from grazing for a 10-year period would produce conditions conducive for long-term (10 years and beyond) special status plant occurrence health.

Direct and indirect effects from grazing management:

There would be no direct effects from domestic livestock grazing or trampling on special status plants. No livestock grazing of flowering stalks or photosynthetic material would occur, and no trampling would displace seedlings or perennial plant crowns. Thus, reproduction would not be limited. No effects from range improvement projects would occur. Spring rehabilitation at Big Willow and Horsehead springs will have no effect on special status plants because none are known to occur at these springs.

Indirect grazing effects from impacts to native pollinators, weed increases, or trailing would not occur. This would result in increased long-term (10+ years) health to the special status plant occurrences and their surrounding plant communities. Lack of grazing would result in increased perennial grass cover, potentially increasing competition with thinleaf goldenhead or harlequin calicoflower. These effects are expected to be negligible.

Direct and indirect effects from juniper management:
Effects to special status plants from juniper management would be the same as described in Alternative B.

3.7 Grazing Management/Socio-economics

3.7.1 Affected Environment – Grazing Management/Socio-economics

Owyhee County had a population estimated to be 11,526 in 2010 (Owyhee County Census 2011), with a change of 8.3% in population from 2000-2010. Between 1970 and 2005, Owyhee County's population grew at an average annual rate of 1.5%, which was generally faster than the United States, but slower than Idaho. While the County's population grew at a 2.7% annual rate in the 1990's, population growth is projected at a more modest 1.6% rate from 2010-2020. In terms of population density, Owyhee County is extremely rural. Owyhee is by far the lowest population density county in Idaho, with only 1.4 persons per square mile. Owyhee County incomes are low and poverty rates are among the highest in the state. Residents of the Treasure Valley come to the rural areas to recreate on weekends and during hunting and fishing seasons. Southwest Idaho is projected to grow by more than 95,000 people by the year 2020, and 77,000 of these people will live in Ada or Canyon Counties (Gardner and Zelus 2009).

Farm and agricultural services are the dominant sector of employment in Owyhee County. This is very unusual, even among other agricultural counties in southern Idaho. As of 2000, over 36% of Owyhee County's employment and services were derived from farming and agriculture (Gardner and Zelus 2009).

Livestock grazing in the Owyhee Mountains became important in the late 1860s. With the establishment of the southern Idaho railroad, approximately 300,000 sheep began migrating from southern Idaho and Snake River Plains through the Owyhees in route to Elko, Nevada. Around the same time, cattle and horses were introduced, increasing the competition for forage in the Owyhee Mountains. Generally, up until the forage adjudications in the 1960s, a combination of cattle, sheep, and horses grazed across the Juniper Mountain area without definitively outlined and assigned areas of use.

The livestock industry is an important component of the local economy. Livestock grazing operations in this area are mostly family-owned ranches based out of Jordan Valley, Oregon, which had a population of 227 as of 2009 (U.S. Census Bureau 2011). Currently, these cow-calf ranching operations depend on public land grazing opportunities for forage (State leases and BLM grazing permits on the Vale District, Oregon, and Owyhee Field Office, Idaho). When cattle are not on public lands, they are fed hay and pastured at home ranches near Jordan Valley.

Cattle were historically trailed from grazing units located in Oregon, and turned out into the Pole Creek Allotment in early to mid-June annually. Since 2006, the authorized season of use has been between July 1 and September 30 and the pasture rotation generally began in Pasture 1A, then cattle are moved to Pasture 1B. Once cattle are removed from the allotment, they are trailed and trucked to home ranches near Squaw Creek and Jordan Valley, Oregon, for the winter. Winter cattle maintenance includes both pasture grass and other supplemental feeding. These livestock operations are primarily cow/calf operations, with calving seasons mainly occurring between January and May annually. Generally, calves are weaned in the fall (September-October) in corrals located on private lands. The herd of cattle grazed on the Pole Creek Allotment is used in a rotation with adjacent Oregon State Lands. The allotment on state lands has several pastures and is used as part of the permittee's overall livestock operation.

The Pole Creek Allotment consists of 23,395 acres of public land, 643 acres of State land, and 448 acres of private land for 2,599 Permitted AUMs. Livestock grazing is authorized from July 1 through September 30 with 500 cattle, although livestock have been removed earlier and grazed with fewer cattle since the 2008 Settlement Agreement. The 1999 RMP identified the Pole Creek Allotment as a Category "I" Allotment (Improve – improve current unsatisfactory resource conditions with adequate expenditure).

Several range improvements are present on the Pole Creek Allotment to help manage livestock. These improvements are important to aid in livestock distribution, control, water, removal, etc. and are essential components for livestock management on the allotment.

Recreation, including both casual use and commercial-guided, is increasing on public lands in the area. Common recreation activities include: hunting, fishing, camping, sightseeing, birding, and OHV riding. Hunting and Byway traveling are the largest recreation uses. The recent Wilderness and Wild and Scenic River designations are anticipated to slightly increase recreation use in this area. Socio-economic effects from recreation in all alternatives are expected to be minimal. Therefore, they will not be discussed further.

3.7.2 Environmental Consequences – Grazing Management/Socio-economics

3.7.2.1 Alternative A1

Effects from grazing management:
Livestock grazing would continue with current stocking levels (see Section 2.4.1). A total of 892 AUMs would be active and authorized from July 1 through August 31 with 451 cattle. There would be a total of 2,599 Permitted AUMs and 1,707 AUMs would be in suspended use.

A grazing rotation would start in Pasture 1A then cattle would be moved to Pasture 1B. No new range improvements would be constructed to improve distribution or livestock control, but range improvement maintenance responsibilities would continue to be required. Livestock management would continue with no changes to livestock operations, current pastures, rotations, or where/how livestock water. The permittee would be required to continue to find additional pasture, compared to Alternative A2. Therefore, a continued increase in costs because of absorption of more cattle elsewhere into the livestock operation and/or an increase in land/hay would be necessary to maintain livestock grazing during the time cattle are not on the allotment with more livestock on private or State lands. Or, the permittee could have a smaller livestock herd resulting in less overall profit because of fewer calves to sell, although less maintenance and feed would be necessary.

Livestock trailing would allow livestock operators (adjacent permittees, etc.) the opportunity to trail across the Pole Creek Allotment to access private, state, and federal lands that they control, own, or are permitted. The time authorized would only allow active trailing, but the short distance on BLM land on the allotment would be easily completed.

Effects of continued juniper expansion:
No juniper treatments or prescribed burns would be implemented; therefore, no rest from livestock grazing would be required. Livestock gathering would continue to be difficult due to dense juniper throughout most of the allotment and no increase in the perennial grass component would occur.

3.7.2.2 Alternative A2

Effects from grazing management:
Livestock grazing would continue with stocking levels identified on the grazing permit (see Section 2.4.2). A total of 1,468 AUMs would be active and authorized from July 1 through September 30 with 500 cattle. There would be a total of 2,599 Permitted AUMs and 1,131 AUMs would remain in suspended use. A grazing rotation would start in Pasture 1A then cattle would be moved to Pasture 1B. No new range improvements would be constructed to improve distribution or livestock control, but range improvement maintenance responsibilities would continue to be required.

Overall economic viability of traditional livestock grazing would not be expected to change over the short term. Livestock grazing management at this proposed use level and season would diminish the socio-economic benefits very slightly for local individuals and the community due to poor upland and riparian conditions (the same use that resulted in conditions identified on the 2001 Determination). Although the socio-economic benefits would be higher for Alternative A2 due to more cattle and AUMs, in the long term, economic viability of the ranching operation would continue to decrease due to a decline in forage base on the allotment, resulting from similar livestock management that resulted in conditions identified on the 2001 Determination (concentration in riparian areas – see Section 3.4.2.2) and increasing juniper expansion.

Effects from livestock trailing would be the same as Alternative A1.

Effects of continued juniper expansion:
The effects of not treating the expansion juniper would be the same as Alternative A1.

3.7.2.3 Alternative B

Effects from grazing management:
This alternative proposes adaptive management in the spring or fall, a 428 Active AUM increase compared to Alternative A1, and a 148 (10%) reduction in active use as compared to Alternative A2 (see Section 2.4.3). This alternative increases grazing duration compared to Alternative A1 and the livestock operator would have to find less forage for 514 cattle for approximately 16 days (428 AUMs). Therefore, the operator would have to use state/private lands for 16 days less, due to an increased length of grazing season on the Pole Creek Allotment compared to Alternative A1. This would result in a decreased cost to the permittee because of less pasture needed for the remaining time or a decrease in hay to feed animals for a shorter period while off of the allotment, or both. The permittee could possibly have a larger livestock herd resulting in more overall profit due to additional calves, although maintenance and feed costs would be higher.

This alternative would give the permittee the option to graze in the spring or fall. If the annual indicator criteria are exceeded, changes to grazing would be made and could require more herding, fewer cattle, or less time, which would have an effect on the permittee's livestock operation. This alternative would require the most gathering effort because of increased and more frequent pasture moves each year. A moderate amount of risk to the permittee would be involved accepting this alternative due to uncertainty between years for livestock numbers, season of use, days on pasture, and herding efforts required.

New range improvements would improve livestock distribution and control, but would require a minor increase in annual fence maintenance. The permittee and the BLM would also have immediate, direct costs for construction and maintenance of rangeland improvement projects. The planned range improvements and juniper treatments within the Pole Creek Allotment would help sustain a viable long-term forage base that would benefit the permittees and community, in addition to the short-term increase in income to the community that could occur with the contracting of proposed juniper treatments and range improvements. These projects could potentially employ local contractors or private citizens in the Owyhee County or greater Treasure Valley area.

Effects from livestock trailing would be the same as Alternative A1.

Effects from juniper management:
Juniper treatments would require rest the year of the broadcast burn with a minimum of two growing seasons of rest following the burn. The permittee would have to find alternate livestock forage during those years. The expected increase in perennial grasses resulting from juniper treatments would reduce utilization levels and improve livestock distribution. Gathering livestock would also be easier due to having less juniper cover for livestock to hide in and allowing the permittee to see longer distances.

3.7.2.4 Alternative C1

Effects from grazing management:
This alternative proposes a two-year rest/rotation on Pastures 1A (Pole Creek Breaks Pasture and and 1B (Horse Flat, Scott Spring, and Berry Gulch Pastures), a 15% increase in active use compared to Alternative A1, and a 30% reduction in active use as compared to Alternative A2. A slight increase in duration of two weeks could occur if range readiness was attained by April 16 compared to Alternative A1 and a slight increase of 137 Active AUMs would be authorized within the Pole Creek Allotment, which would allow the permitee to slightly increase herd size. Therefore, a slight decrease in costs because of less absorption of cattle elsewhere into the livestock operation could occur. Additionally, a possible decrease in land/hay would be required to maintain livestock grazing during the time cattle are not on the allotment due to an increased time on the allotment. There would be a 15% increase in total use, but it would be expected to have a minor effect on the economic inputs to the area.

The Dutcher Pasture would be used as a gathering field during years when the Pole Creek Breaks Pasture is grazed, then used in the fall during years the Pole Creek Breaks Pasture is rested, which would allow a small portion to be grazed in the fall. This alternative would require the least amount of gathering effort, as the livestock would be turned out into one pasture (or two pastures if the Dutcher Pasture is scheduled to be grazed in the fall). This would be a benefit to the permittee because gathering livestock on this allotment is very difficult due mostly to very dense juniper and rugged terrain.

Range improvement effects would be the same as Alternative B.

Effects from livestock trailing would be the same as Alternative A1.

In general, other socio-economic effects would be similar to those described in Alternative B, but to a slightly increased extent due to a larger decrease in livestock use.

Effects from juniper management:
Juniper treatment effects would be the same as Alternative B.

3.7.2.5 Alternative C2

Effects from grazing management:
This alternative proposes a two-year rest/rotation on Pastures 1A (Pole Creek Breaks Pasture and and 1B (Horse Flat, Scott Spring, and Berry Gulch Pastures), and a 40% reduction in active use as compared to Alternative A1. Approximately 357 fewer AUMs would be authorized within the Pole Creek Allotment, which would require the permitee to find additional pasture, compared to Alternative A1. Therefore, an increase in costs because of an absorption of more cattle elsewhere into the livestock operation and an increase in land/hay would be required to maintain livestock grazing during the time cattle are not on the allotment with more livestock on private or State lands. Or, the permittee could have a smaller livestock herd resulting in less overall profit.

Effects to the Dutcher Pasture would be the same as Alternative C1, but to a lesser extent.

Range improvement effects would be the same as Alternative B.

Effects from livestock trailing would be the same as Alternative A1.

In general, other socio-economic effects would be similar to those described in Alternative B, but to a greater extent due to a much larger decrease in livestock use.

Effects from juniper management:
Juniper treatment effects would be the same as Alternative B.

3.7.2.6 Alternative D

Effects from grazing management:
Livestock grazing on the Pole Creek Allotment would not be authorized. The permittee would have to find pasture/forage for approximately 451 cattle and 62 days per year compared to Alternative A1. If grazing did not continue on the Pole Creek Allotment there would be a negative economic effect to the permittee and livestock industry of Jordan Valley and Owyhee County, as a whole. For ten years, the area would lose a valuable allotment for livestock grazing which had previously been used in conjunction with a sustainable ranching/livestock operation for many years.

No range improvements would be constructed, but the BLM has put money into existing range improvement projects (i.e., fences, spring developments, etc.) that would not be maintained and eventually be in disrepair. Big Willow Spring and Horsehead Spring rehabilitation would have no effect to grazing management or socio-economics in the area.

Ranching is a large part of the community. Losing the ability to graze livestock on this allotment would have negative implications to the local livestock industry, and to the local communities that depend on this revenue source. For example, if the permittee had a total of four employees (including the permittee), these individuals could potentially lose their jobs. As of 2009, Jordan Valley had a population of 227. An additional four unemployed individuals would increase unemployment in the Jordan Valley community by 1.8% (this number is based on population, not workforce). Although the allotment would be closed to livestock during this ten-year term, more forage may be available with improved resource conditions and future livestock grazing may be authorized, possibly resulting in a positive effect after the ten-year term. Additionally, no wildlife/livestock conflicts would occur and could result in improved socio-economic benefits because of possible increases to wildlife for hunting, fishing, sight-seeing, etc.

No livestock trailing within the Pole Creek Allotment would require livestock operators to find alternate routes or use trucks to haul livestock across the allotment. The identified road may not be passable with large semi-trucks and may require the cattle to be trailed a different route. This could cause an increase in cost to livestock owners and may cause further damage to the roads.

In general, other socio-economic effects would be similar to those described in Alternative B, but to the greatest extent of any alternative due to no livestock use for a ten year term.

Effects from juniper management:
Juniper treatments would be implemented and effects would be the same as Alternative B.

3.8 Cultural and Paleontological Resources

3.8.1 Affected Environment – Cultural and Paleontological Resources

The Juniper Mountain cultural landscape has been associated with humankind for thousands of years. The land provided aboriginal peoples and later Euroamerican settlers the opportunity to construct suitable dwellings, acquire needed natural resources and maintain an adequate subsistence. Ancestors of the Shoshone and Paiute peoples for centuries used this and surrounding areas for camping and subsistence activities. Presently, the Shoshone and Paiute Tribes retain an active interest in their traditional lands and claim aboriginal title to them. Historically, Euroamericans have used the area for livestock grazing and other commercial enterprises which continue to this day. More recently, the area has become increasingly popular for public recreation and this use has added to the potential risks faced by cultural resources.

To date, five cultural resources inventories have been completed within the Pole Creek allotment totaling approximately 20,025 acres (about 85% of the allotment's federally administered land), 605 acres of State owned land and 441 acres of private land. In total, nearly 86% of the entire allotment has been inventoried. There are 36 sites recorded as a result of these inventories and other sources, two of which are potentially eligible for the National Register of Historic Places (NRHP), but none are listed. With the exception of one location, only minor impacts from livestock grazing on the recorded sites have been observed, either initially or during subsequent monitoring visits. All of the currently proposed range projects have been surveyed except for the Pole Creek Breaks fence. Due to that area's limited accessibility and low potential for site discovery, an inventory for the proposed fence has been delayed.

Paleontologically, the allotment resides on the Glenns Ferry formation, the most common geologic formation in southwestern Idaho. Potential fossil discoveries may include camels, mastodons, ground sloths, lion-sized cats and primitive dogs. There are no known or recorded paleontological sites within the allotment.

Native American Religious Concerns - The Shoshone-Paiute Tribes of the Duck Valley Indian Reservation actively maintain their cultural traditions and assert aboriginal rights and/or interests in this area. As Native American traditions and practices are tied to the elements of the natural environment, any impacts to the earth and its natural environment are of concern to the Tribes. There are no known traditional cultural areas within the allotment. Consultation with the Shoshone-Paiute Tribes occurred on July 16, 2009.

3.8.2 Environmental Consequences – Cultural and Paleontological Resources

3.8.2.1 Alternative A1

Under this alternative no new range improvement projects or juniper treatments would occur, therefore no cultural resources would be disturbed from these activities. Varying effects from livestock grazing would continue; specifically, ground disturbances to sites from hoof action mechanics could be expected in areas where livestock trailing occurs or in areas where they would congregate. Artifact breakage, compaction and transport could result. Trampling contributes to erosion that can affect the integrity and continuity of cultural sites.

3.8.2.2 Alternative A2

Since no new range improvement projects or juniper treatments would occur, there would be no disturbance to cultural resources from these activities. Even though AUMs would rise significantly, no major increase in effects to sites from livestock grazing would be predicted except for those in unprotected areas of livestock congregation or trailing. Disturbances would be as described in Alternative A1.

3.8.2.3 Alternative B

The effects to cultural sites from livestock grazing and trailing under this alternative would be similar to those in Alternative A1, although disturbances could be exacerbated if turnout occurs during the early spring when soil moisture is greater. Compaction of wet sediments from trampling can have a significant, negative effect on site integrity from the intermixing of temporal layers. The possibility of artifacts being transported from their original deposition area of is also increased.

Because cultural sites would be avoided during construction, proposed range improvement projects would be designed to have no effect on cultural or paleontological resources, and tribal members' access to these areas would be undiminished. In one instance, a site that is potentially eligible for the NRHP would be protected by the construction of an exclosure fence. The fence would prevent livestock, wildlife and other incidental disturbances to the site.

Cultural resources are not expected to sustain any direct or indirect adverse effects from proposed juniper treatments because project design elements have been incorporated to protect identified sites from mechanical and fire-related disturbances. Sites would be avoided in tree felling areas and black-lining (protective pre-burning) around combustible resources would occur in prescribed burns. Consultation with the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation and any other concerned tribes with established ties would prevent disruption of any traditional cultural practices in the treatment areas.

3.8.2.4 Alternatives C1 and C2

The effects to cultural resources are similar to those in Alternative B, but with a slightly lessened chance of occurrence due to rotating pasture rest.

3.8.2.5 Alternative D

Two new range rehabilitation projects would occur and no livestock grazing would be permitted for a 10 year period. Both of the proposed range projects have been surveyed for cultural resources; none will be affected if implemented. Any effects attributed to livestock grazing, as described in other alternatives, would not happen. The possible effects from juniper treatments would be as described in Alternative B.

3.9 Recreation and Visual Resources

3.9.1 Affected Environment – Recreation and Visual Resources

The entire Pole Creek Allotment is located within the Owyhee Extensive Recreation Management Area (ERMA). An ERMA is an area where recreation management is only one of several management objectives, and where a limited commitment of resources is required to provide extensive and unstructured types of recreation activities (USDI-BLM 1999b). The main recreational activities within the allotment are hunting, camping, fishing, sight-seeing, backpacking, horseback riding, and nature study.

The off-highway motor vehicle (OHV) designation for the entire Pole Creek Allotment is limited to designated roads and trails. Motorized and mechanized cross-country travel is not allowed. OHV regulations apply to permitted uses as well as to general public use.

The Recreation Opportunity Spectrum (ROS) classification is used to characterize the type of recreational opportunity settings, activities, and experience opportunities that can be expected in different areas of public land. The Pole Creek Allotment contains multiple settings for recreationists, however the majority of the allotment is categorized as Primitive and Semi-Primitive Motorized. Other categories include a rural setting in the northern portion of the allotment in the area surrounding private properties, as well as Semi-Primitive Non-Motorized.

The Primitive classification is an area characterized by an essentially unmodified natural environment. The concentration of users is very low and the evidence of other users is minimal. The area is managed essentially to be free from evidence of man-induced facilities for comfort or convenience. Only facilities essential for resource protection are used. Motorized use within the area is not permitted (USDI-BLM 1999b).

The Semi-Primitive Motorized and the Semi-Primitive Non-Motorized classifications are areas that are characterized by a primarily unmodified natural environment. There is evidence of other users in the area; however, management actions encourage limited contacts between users. Semi-Primitive Motorized classification permit motorized uses within the area, and Semi-Primitive Non-Motorized does not (USDI-BLM 1999b).

The Rural classification is an area that is characterized by a substantially modified natural environment. Resource modifications and utilization practices are obvious, the sights and sounds of man are readily evident, and the concentration of users is often moderate to high (USDI-BLM 1999b).

The Visual Resource Management (VRM) classes within the Pole Creek Allotment consist of a small portion of Class III in the north with the remainder of the allotment designated as Class IV.

The VRM class III objective is to partially retain the existing character of the landscape and the level of change to the characteristic of the landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features or the characteristic landscape. This classification occurs where the amount of use is relatively high and scenic quality is generally good. Maintenance, construction, and reconstruction of rangeland facilities, roads, and vegetation treatment projects are permitted. In this classification emphasis is placed on construction techniques that will reduce the projects visual impacts to the natural landscape (USDI-BLM 1999b).

The objective for VRM class IV is to provide for management activities which would require major modifications to the existing character of the landscape. These activities may dominate the view and be the focus of attention. However, every attempt should be made to minimize impacts with careful location and minimal disturbances (USDI-BLM 1999b).

3.9.2 Environmental Consequences – Recreation and Visual Resources

3.9.2.1 Alternative A1

Effects to recreationists would primarily be the interaction with livestock during periods of livestock use. During periods of no livestock use, no effects would be expected. Overall conditions of the area would continue to improve in the uplands due to the reduction in AUMs compared to grazing before 2008 (Alternative A2); however, riparian areas would be impacted from the summer grazing. As upland conditions improve, visual qualities would also begin to improve throughout the area, thus creating a more positive recreation experience. Improved conditions could also potentially result in increased hunting success as more wildlife utilize the area.

There are no proposed spring developments or water haul sites under this alternative, therefore the congregation of livestock would continue to occur in the same areas. Additional water sources tend to distribute livestock more evenly throughout the area, decreasing the likelihood of livestock on roads and trails, thus minimizing recreationists' interactions with livestock. Additionally, there are no proposed fence projects for this alternative, which would maintain the existing opportunities for hikers and equestrian users to travel cross country. It also prevents the creation of new disturbance and potentially new trails along fence lines.

The impact on recreationists and visual resources due to trailing activities would be negligible. In the slim chance that recreationists encounter the trailing operation while traveling the designated trailing route they would suffer only minor delays until they could navigate their way through the livestock herds. Impacts to visual quality would be negligible due to the fact that the activity occurs on an existing road, thus no new impacts would be expected.

3.9.2.2 Alternative A2

Effects to recreation would be the interaction with livestock during periods of livestock use. During periods of non-livestock use, no impacts would be expected. Areas would not be expected to improve due to management similar to those that resulted in the 2001 Determination. Therefore, no enhanced opportunities for recreation would occur. For example, in areas where vegetation and wildlife habitat is currently improving, these areas would not improve through implementation of this alternative due to increased AUMs and hot season grazing for an additional month. This would result in a decline in hunting opportunities for recreationists and would also continue to impact recreational opportunities.

Like Alternative A1, there are no proposed range improvements under this alternative.

Implementation of Alternative A2 would likely reduce visual conditions of the area. Areas that are improving under current management would not continue to improve. Additionally, scenic quality that is currently being impacted by livestock use would also continue. Although conditions would not improve and recreation opportunities would decline, these impacts are considered acceptable within the VRM objectives for this area. Because there are no proposed range development projects under this alternative, no impact to VRM would occur.

Effects on recreationist and visual resources due to trailing operations would be the same as those identified in Alternative A1.

3.9.2.3 Alternative B

Effects to recreationists would primarily be the interaction with livestock during periods of livestock use. During periods of no livestock use, no effects would be expected. Overall conditions of the area would improve due to the reduction in AUMs and the use of adaptive management which allows BLM to adjust grazing practices if identified criteria are exceeded. This would also improve visual quality throughout the area, thus creating a more positive recreation experience.

The proposed range improvements would have some effect on recreationists. The construction of approximately 2.1 miles of the State Line fence, 1 mile of the Horse Flat Pasture division fence, and 0.5 miles of the Middle Fork Owyhee exclosure fence would reduce opportunities for cross-country travel for hikers and equestrian users. There is no developed trail system in the area that would be affected by the fence construction. The construction of an exclosure fence around CCC Spring and well as the exclosure expansion projects in the Little and Big Willow Springs would have a similar effect. These projects, as well as the reconstruction of the Manada Flat Spring pipeline would have some short-term negative visual effects as new areas of disturbance are created. However, because of the excellent vegetative screening and rugged topography throughout much of the allotment and minimal impact construction techniques, these types of man-made features are substantially unnoticeable except at very close distances. The long-term effects from the new developments would improve livestock management and distribution, ecological health, and scenic quality throughout the allotment as a whole. These effects are permitted and considered acceptable with the VRM objectives for this area.

Hunting and camping would likely be affected during juniper treatment operations. Depending on the time (August-October and early spring) of broadcast and/or jackpot burning, big game hunters and campers in the area may experience helicopters, BLM crews, vehicles, noise, and smoke in the vicinity. Sightseers in the area could also be affected during operations. In the long term, juniper treatment operations would be beneficial to the overall health of the area, in turn benefitting hunters, sightseers, and other recreationists.

The results of juniper treatment projects are somewhat subjective when it comes to visual resources; this is due to the fact that beauty is in the eye of the beholder. While some may yearn for densely populated juniper forests, others may desire open areas and scenic vistas. With the proposed projects, the BLM would achieve both while at the same time accomplishing management objectives, preserving old growth juniper, and restoring sagebrush, mahogany, and aspen stands throughout the area.

Juniper treatment projects would have extensive effects on visual resources. An estimated 50-70% reduction in seral junipers would have a beneficial long-term effect on visual quality as scenic vistas open up and aspen, perennial grasses and other vegetation increase as a result of juniper removal. Additionally, retaining 30-50% of the existing seral juniper as well as old growth juniper and mahogany stands would assist in maintaining the scenic quality throughout the area.

During juniper treatments, for a period of several years, effects to visual resources would be minimal. Hand-cutting would create the most noticeable short-term effects. These effects would end after trees are burned and perennial grasses recover. However, in low density juniper areas the slash would be left on site and not burned. Dead junipers scattered across the landscape would be noticeable for several years, and some would be apparent for the foreseeable future. In addition, the visual effect of the cut trees would be reduced somewhat by cutting the stumps within eight inches of ground level and the absence of piling.

The girdling of trees would provide the landscape with a more natural appearance as trees slowly expire, which helps maintain the visual characteristics of the area. Girdling, as opposed to the dropping of trees on site, gives casual observers/sightseers traveling through the area the appearance that the area was once burned by wildfire.

Burning would have short-term effects on the visual resources within the project area. During operations, the project area would be affected by smoke and BLM crews working in the vicinity. Once burning operations were completed, fire-blackened areas and dead vegetation would be noticeable for several years. Visual effects would improve after grasses and shrubs begin to reestablish. The use of fire in the vegetation treatments would give the area a more natural appearance. In the long term, burning would improve the overall health and scenic quality of the area.

Virtually all the proposed project work is located within class IV VRM; vegetation treatment projects are permitted under the VRM classification for this area.

Effects on recreationist and visual resources due to trailing operations would be the same as those identified in Alternative A1.

3.9.2.4 Alternative C1

Effects to recreationists and visual qualities would be less than those identified in Alternatives A1, A2, and B. The proposed rest would reduce interactions between livestock and recreationists. During periods of no livestock use, effects would be minimal. As conditions of the area improve, visual qualities would also begin to improve throughout the area, thus creating a more positive recreation experience. Improved conditions could also potentially result in increased hunting success as more wildlife utilize the area.

The effects to recreationists and visual qualities as a result of the proposed range improvement projects and juniper treatment strategies would be the same as those identified in Alternative B.

Effects on recreationist and visual resources due to trailing operations would be the same as those identified in Alternative A1.

3.9.2.5 Alternative C2

Effect to recreationists and visual qualities would be similar to those identified in Alternative C1 but with an even greater benefit due to the 40% reduction in AUM's as compared to Alternative A1, as well as rest and deferment. The proposed rest and reduction in AUMs combined with a reduction of overall livestock numbers would reduce interactions between livestock and recreationists. During periods of no livestock use, effects would be minimal. As conditions of the area improve, visual qualities would also begin to improve throughout the area, thus creating a more positive recreation experience. Improved conditions could also potentially result in increased hunting success as more wildlife utilize the area.

The effects to recreationists and visual qualities as a result of the proposed range improvement projects and juniper treatment strategies would be the same as those identified in Alternative B.

Effects on recreationist and visual resources due to trailing operations would be the same as those identified in Alternative A1.

3.9.2.6 Alternative D

This alternative would provide the greatest benefit to recreationists and visual resources. There would be no interaction between livestock and recreationists for a period of 10 years, and as the overall conditions of the area improve so would visual quality, thus creating a more enjoyable recreation experience. There would be no effects to upland vegetation and riparian areas from livestock, thus improving the overall health and visual quality throughout the allotment. Improved wildlife habitat conditions would increase wildlife viewing opportunities and potentially result in increased hunting success.

There are two proposed range improvement projects and effects would be as described in Alternative B. Effects to recreationists and visual resources as a result of juniper treatment strategies would be the same as those identified in Alternative B.

3.10 Lands with Wilderness Characteristics

3.10.1 Affected Environment – Lands with Wilderness Characteristics

Lands with wilderness characteristics (LWC) are lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in Section 2(c) of the Wilderness Act. In order for an area to be classified as LWC, it must possess sufficient size (5,000+ acres), naturalness, and outstanding opportunities for either solitude and/or primitive and unconfined recreation. In addition, it may also possess supplemental values, such as ecological, geological, or other features of scientific, educational, scenic, or historical value.

As directed by Section 201 of FLPMA, BLM began an inventory of public lands identifying LWCs in the 1970s. The OFO has approximately 100 separate units that were each assessed for wilderness characteristics through a public process. An update of the 1970's inventory, which is required by FLPMA, is currently ongoing. Units within the Pole Creek Allotment have recently been updated and those findings are reflected in this document. The Pole Creek Allotment consists of all or portions of three units (Map 13) that contain LWCs. These units are identified as:

106-41 - Horsehead Spring
106-42 - Squaw Creek Canyon
106-45 - Middle Fork Owyhee River

Portions of Units 106-41, 42, and 45 were all part of three Wilderness Study Areas (WSAs): Big Willow, Middle Fork Owyhee River, and Squaw Creek Canyon. In 2009, Congress passed OMA designating more than 500,000 acres of wilderness in Owyhee County. OMA also released several WSAs, including Big Willow, Middle Fork Owyhee River, and Squaw Creek Canyon, and opened these lands up to other uses, as per the recommendation of the 1991 Idaho Wilderness Study Report (USDI-BLM 1991). All three recommendations in the report contained the following language:

"Wilderness designation would reduce the flexibility necessary to improve the ecological condition of plant communities through vegetative manipulation."

"The long term protection of multiple-use objectives in the WSA is dependent upon restoring good ecological condition to plant communities through vegetative manipulation."

Units 106-41, 42, and 45 within the Pole Creek Allotment which were identified as having LWCs are listed and described below:

Unit 106-41- Horsehead Spring – This unit contains 6,528 acres of BLM administered lands and is located along the Idaho/Oregon border. The unit is dominated by heavily eroded rhyolitic breaks and a prominent narrow canyon (i.e. Pole Creek). The canyon bottom contains a variety of riparian vegetation. The unit landscape is dominated by juniper; its stand density increases as elevation is gained in an easterly direction.

This unit is used for grazing and is free of significant improvements. With the exception of the western boundary (ID/OR), the remainder of the unit boundary is bordered by a route (defined as a route maintained solely by vehicle passage). There are two dead-end routes penetrating the unit in the northeast portion, which lead to three spring developments. A short, north-south fence line is located in the southwest portion of the unit. The unit also contains a fence penetrating into the southeast corner of the unit as well as some associated gap fencing along Pole Creek canyon. There are exclosures at the Big Willow, Horsehead, and Post Camp spring developments.

Because of the dense stands of juniper and rugged topography, the spring developments and routes in the northeast portion of the unit are substantially unnoticeable except at very close distances. The fence lines and exclosures are also substantially unnoticeable. The natural features of the area are so prominent and of such high interest that the casual observer would tend to overlook the imprints of man in favor of examining the natural features.

Considering the excellent topographic and/or vegetative screening, the unit is of sufficient size and configuration to afford outstanding opportunities for solitude.

Recreational opportunities include camping, backpacking, hiking, photography, sightseeing, fishing, hunting, and horseback riding. The quality of recreational opportunities is generally considered outstanding because of the exceptional or unusual natural features and recreational attractions throughout the unit.

Unit 106-42 – Squaw Creek Canyon – This unit contains 18,297 BLM-administered acres with two state inholdings and a finger of private land to the north. The unit is located on well-dissected terrain sloping northwest from Juniper Mountain. Relatively flat ridges and benches are interspersed with steep sloping drainages. The canyon of Squaw Creek, along with several major tributary drainages, is the dominant topographic feature. Dense stands of juniper occupy a major portion of the unit, with the exception of rocky canyon areas and scattered ridge top openings. Dense riparian vegetation occurs in the canyons.

This unit is used for grazing. Improvements within the unit include several unsubstantial fence lines, six spring developments, two cabins, a reservoir and a corral, which are all located in the eastern portion of the unit in the Trout Springs Allotment except for some short gap fences. A number of routes in the northwest and western portion of the unit constitute other human imprints.

The imprints of man are minor, and impacts are primarily located along the periphery of the unit. The area is substantially free of significant evidence of human influence. Due to the presence of significant imprints contiguous to a state inholding in the southern portion of the unit, the boundary was changed to exclude the state land and 150 acres of public land containing a route and developed spring adjacent to a large juniper chaining area.

Although the modified unit has private land fingers on the north and south, its size, configuration, and good to excellent topographic and vegetative screening provide outstanding opportunities for solitude.

Recreational opportunities include camping, backpacking, hiking, photography, sightseeing, fishing, hunting, wildlife observation, and horseback riding. The diversity and quality of these opportunities is considered outstanding. The presence of recreational attractions throughout the unit makes the area appealing for multiple day trips within the area.

Unit 106-45 – Middle Fork Owyhee River - This unit contains 15,663 BLM-administered acres in a rectangular configuration. The topography of the unit gradually changes from gently rolling hills and tablelands covered with desert shrubs and scattered juniper in the west to rugged mountainous terrain covered with dense stands of juniper in the east. The unit encompasses most of the upper drainages of the Middle Fork Owyhee River. The canyons are typically steep walled and narrow with heavy riparian vegetation.

The unit is used for grazing. There are a number of routes and fence lines (some bladed) in the north and west sides of the unit, within the Pole Creek Allotment. These routes and fences penetrate but do not bisect the unit. There are also five spring developments (four within Pole Creek Allotment), including one developed by the Civilian Conservation Corps.

These intrusions generally affect the periphery of the unit. However, the majority of the unit retains its natural character. The impacts of the intrusions are localized because of topographic and vegetative screening.

The relatively large size and good configuration of the unit combined with excellent topographic and vegetative screening afford outstanding opportunities for solitude.

Primitive and unconfined recreational opportunities within the unit are primarily associated with the Middle Fork Owyhee River. These opportunities consist of backpacking, photography, sightseeing, horseback riding, hunting, and fishing. The quality of recreational opportunities is considered outstanding because of the exceptional or unusual natural features and recreational attractions within the unit.

3.10.2 Environmental Consequences – Lands with Wilderness Characteristics

3.10.2.1 Alternative A1

LWCs are likely to improve in the uplands with the proposed grazing system due to the reduction in AUMs; however, riparian areas would likely be degraded by the summer grazing.

Juniper encroachment would also continue to occur throughout the area under this alternative, affecting the ecological health of upland and riparian plant communities throughout the area and their natural appearance.

There are no proposed range developments under this alternative; therefore there would be no additional impact or impairment of LWCs. There would be no impacts to solitude or primitive and unconfined recreation in this alternative. This alternative would have long-term impacts from grazing and juniper effects, but not to the extent that they would impair the LWCs.

Impacts to LWC's as a result of trailing activities would be negligible. The activity occurs on a primitive route within the area, therefore there are no impacts to the areas overall naturalness and scenic quality.

3.10.2.2 Alternative A2

Impacts to LWCs under this Alternative include degraded riparian, upland, and wildlife habitat, which would appear to have been affected by domestic livestock. This management strategy could affect the naturalness of LWCs identified in Units 106-41, 42, and 45 if grazing standards are not met. Additionally, juniper encroachment would continue to occur throughout the area under this alternative, affecting the ecological health of upland and riparian plant communities throughout the area and their natural appearance. There are no proposed range developments under this alternative; therefore there would be no additional impact or impairment of LWCs. There would be no impacts to solitude or primitive and unconfined recreation in this alternative. This alternative would have long-term impacts due to grazing and juniper effects, but not to the extent that they would impair the LWCs.

Effects to LWC's from trailing activities would be the same as those identified in Alternative A1.

3.10.2.3 Alternative B

LWCs are likely to improve with the proposed grazing system under this alternative. Overall conditions of the area would improve due to the reduction in AUMs and the use of adaptive management which requires BLM to adjust grazing practices if AIC are exceeded. This would also improve ecological health, visual quality, and naturalness throughout the area.

Proposed range improvements (fences) would have some minor impact (as defined above) on the area's naturalness throughout the allotment. However, these projects would not impair the LWCs because they are generally inconspicuous. Many of these types of projects currently exist throughout the allotment and do not hinder the area's wilderness characteristics. Because of the excellent vegetative screening and rugged topography throughout much of the allotment and minimal construction impacts these types of man-made features are substantially unnoticeable except at very close distances. In addition, the natural features of the area are so prominent and of such high interest that the casual observer tends to overlook the imprints of man in favor of examining the natural features. Solitude and primitive and unconfined recreation would not be impacted as a result of these projects.

The long-term effects from the new developments would improve livestock management and distribution throughout the allotment, thus improving the area's ecological health, naturalness, and scenic quality. There would be no impairment (as defined above) of LWCs.

Juniper treatments throughout the area would have short-term impacts to LWCs. Naturalness is the characteristic most likely to be affected by the proposed project. During juniper treatments, hand-cutting would create stumps and slash, the most noticeable short-term effects. Visual effect is not expected to be substantial because the stumps would be cut within eight inches of ground level and slash will not be piled. These effects would end after the prescribed burn and perennial grasses recover. Areas where the slash is left on site and not burned would take several years to regain a more natural appearance.

The girdling of trees would provide the landscape with a more natural appearance as trees slowly expire, which helps maintain the naturalness and visual characteristics of the area. Girdling, as opposed to the dropping of trees on site, gives casual observers/sightseers within the vicinity the appearance that the area was once burned by wildfire.

Effects to solitude as a result of the juniper treatment operations are considered minimal. Juniper treatment projects would reduce an estimated 50-70% of seral junipers, which would reduce some of the opportunities for solitude throughout the units. However, with considerable vegetation remaining and the rugged topography of the units, opportunities for solitude would still be considered outstanding. Short-term impacts would also occur during treatment operations while crews were in the area, potentially reducing opportunities for solitude; however these impacts are temporary and considered negligible.

There would be no effects to opportunities for primitive or unconfined recreation as a result of the juniper treatment projects.

Overall, the proposed projects would control the encroachment of juniper and improve riparian and vegetative health conditions throughout the area, restoring existing shrub steppe, aspen and riparian communities. This in turn would enhance LWCs by restoring the area to its more natural state. Although some minimal impacts are expected in the short-term, there would be no long-term impairment of LWCs.
Effects to LWC's from trailing activities would be the same as those identified in Alternative A1.

3.10.2.4 Alternative C1

LWCs are likely to improve with the proposed grazing system under this alternative. Overall the conditions of the area would improve due to the proposed reduction in active AUMs combined with pasture rest. This would improve ecological health, visual quality, and naturalness throughout the area.

The effects to LWCs as a result of the proposed range improvement projects and juniper treatments would be the same as those identified in Alternative B.

Effects to LWCs from trailing activities would be the same as those identified in Alternative A1.

3.10.2.5 Alternative C2

Effects to LWC's would be similar to those identified in Alternative C1 but with an even greater benefit to LWC's due to the reduction in AUM's combined with rest and deferment. Overall the conditions of the area would improve, thus benefiting ecological health, visual quality, and naturalness.

The effects to LWCs as a result of the proposed range improvement projects and juniper treatments would be the same as those identified in Alternative B.

Effects to LWC's from trailing activities would be the same as those identified in Alternative A1.

3.10.2.6 Alternative D

LWCs would likely improve with extended rest under this alternative. There would be no effects to upland vegetation and riparian areas from livestock, thus improving the overall health, naturalness, and visual quality throughout the allotment

There would be no effect to LWCs from proposed range improvement projects under this alternative. Effects to LWCs as a result of juniper treatments would be the same as those identified in Alternative B.

3.11 Air Quality

3.11.1 Affected Environment – Air Quality

Air quality in a given area is described by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. EPA for criteria pollutants (ozone, carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, lead, and particulate matter). These standards are generally expected to be met under the existing conditions in the area. Air quality in the project area is considered good due to the rural setting and distance from any affecting sources. Consequently, ambient pollutant concentrations have rarely been monitored. The nearest monitoring stations are located in Boise where particulate matter (PM10) and CO are of concern. Recent monitoring in the Treasure Valley area show two new pollutants of concern – fine particulate (PM2.5) and ozone. In accordance with the ORMP, the BLM would meet or exceed the NAAQS and the Prevention on Significant Deterioration (PSD) regulations with all authorized actions.

The IDEQ has the primary responsibility to carry out the requirements of the Federal Clean Air Act (CAA) in Idaho. The primary mechanism for implementation is known as the State Implementation Plan, which EPA requires each state to prepare.

The CAA also establishes a national goal of preventing any further degradation or impairment of visibility within federally designated attainment areas. Attainment areas are classified as Class I, II, or III and are subject to the PSD program. Class I areas include some national wilderness areas and national parks. Class III status is assigned to attainment areas to allow maximum

industrial growth while maintaining compliance with NAAQS. All other attainment areas are designated Class II.

Lands within the OFO (including the Pole Creek Allotment) are designated as Class II, which allows moderate deterioration associated with moderate, well controlled industrial and population growth. Additionally, the BLM manages designated wilderness areas as Class II unless they are reclassified by the State as a result of the procedures prescribed in the CAA [BLM Manual 8560 Sec. (.36)(B)]. The Jarbidge Wilderness Area (approximately 60 miles east) is the closest Class I designated area.

Currently, air quality parameters are in compliance and exceeding federal and State standards due to a lack of emission sources throughout much of the area based on its rural setting. The major emission sources in the area would be seasonal burning of farm fields. Most livestock operations in the area contribute small amounts of particulate matter into the atmosphere. Large feed lot operations can contribute a major source of ammonia (IDEQ 2010), but these types of operations are not located near or within the project area.

Current knowledge of carbon storage and movement in the Great Basin is limited. The most relevant research on the carbon movement within these systems is being conducted by Ben Rau at the University of Nevada, Reno through the SageSTEP Project. Rau (2008) reported that woodland encroachment has caused an increase in above and below ground woody biomass which acts as a temporary carbon sink. This could be misconstrued as evidence that woodland encroachment is beneficial in offsetting some of the effects of climate change. Decades of fire suppression have caused build-ups of woody fuels on landscapes throughout the west. This results in massive carbon emissions when high-severity wildfires occur. These high severity fires have been more common over the past twenty years. Rau estimated that these increases in high-severity wildfires are off-setting the carbon stored by expanding woodlands. Also, these wildfires may be releasing much of the carbon stored due to fire suppression from 1910 to the present. While more information is needed to determine the exact balance, it is known that the increasingly common high-intensity fires are more detrimental to ecosystems, require more time and money for recovery, and volatize more carbon than low intensity fire (Rau 2008).

3.11.2 Environmental Consequences – Air Quality

3.11.2.1 Alternative A1

There would be minimal effects to air quality as a result of livestock grazing, from minor methane emissions and fugitive dust from cattle trailing. Currently air quality in this area is in compliance with and exceeding Federal and State standards and this trend would continue.

There are no proposed juniper treatment projects identified; therefore, no effects to air quality would occur.

3.11.2.2 Alternative A2

Effects to air quality as a result of livestock grazing and no juniper treatments would be the same as described in Alternative A.

3.11.2.3 Alternative B

Effects to air quality as a result of livestock grazing would be the same as described in Alternative A.

The use of prescribed fire during juniper treatment projects would result in a moderate short-term negative effect on air quality and visibility during and immediately following the actual activity. Air quality effects would be in the form of smoke and dust emissions which are predominantly in the Particulate Matter (PM) 10 and PM 2.5 size range. This activity is not expected to exceed any State and/or Federal air quality standards based on the types of fuels and size of burns. Smoke would be noticeable over a wide area of western Owyhee County for 1-2 days following the burns. No Class I airsheds would be affected.

The intensity of the prescribed fires would be expected to be lower than wildfire, and therefore release less carbon initially because less fuel would be consumed. Prescribed fire also reduces the probability of high-intensity wildfire; therefore, this may result in a slight indirect long-term reduction in carbon emissions. Additional carbon would be slowly released from incompletely consumed trees as they decompose, but some of the material may be returned and stored in the soil and converted to humus over time (Rau 2008).

More important, however, is a long-term carbon storage effect resulting from the relatively large amount of juniper root biomass (carbon) that would be held in the soil, as opposed to above-ground biomass whose carbon would be returned to the atmosphere from burning or above-ground decomposition (Rau 2008). In addition, the rapid recovery of deep-rooted grasses (and other herbaceous species) from the reduction in juniper competition would increase soil carbon storage from the growth and die back of perennial grass root systems each year.

The proposed juniper treatments would be expected to have a long-term indirect effect of decreased carbon emissions and increased soil carbon sequestration by potentially reducing high-intensity wildfires, slowing the rate of carbon turnover, and providing long-term carbon storage for the below-ground juniper biomass (roots). Most importantly, juniper treatments would restore the shrub steppe communities whose rapid root turnover would store carbon into the soil.

3.11.2.4 Alternative C1

Effects to air quality would be the same as those identified in Alternative B.

3.11.2.5 Alternative C2

Effects to air quality would be the same as those identified in Alternative B.

3.11.2.6 Alternative D

Effects to air quality would be similar to those identified in Alternative B, with no air quality effects from livestock grazing.

4.0 Cumulative Effects

Cumulative Effects Applicable to All or Most Resources:
Cumulative effects from activities proposed in the Pole Creek Allotment in combination with other activities are discussed below for each resource. "Cumulative Effect" is defined as the "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7). The Council on Environmental Quality (CEQ) interprets this regulation as referring only to the cumulative impact of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past, present, and reasonably foreseeable future actions.

Scope
The scope (area and timeframe) of the cumulative effects analysis is described for each resource. Past, present, and reasonably foreseeable future activities and events in the general area that affect all or most resources include livestock grazing, wildfires, juniper treatments (cutting and prescribed burns), and transportation planning. Other activities that may affect only one or a few resources will be discussed in the individual resource sections based on that resource's cumulative effects analysis area and specific effects to that resource. Reasonably foreseeable additions include activities with completed NEPA scoping or decisions, with implementation planned to begin within three years.

Cumulative Effect Activities

Although different resources used different cumulative effects analysis areas, tailored to the specific issues, a general area can be defined that includes most resources' cumulative effects analysis areas. This area is approximately delineated by Deep Creek on the east, East Fork Owyhee River on the south, main fork Owyhee River on the west, and the ridge defining the North Fork Owyhee watershed on the north. The analysis area was chosen because it was expected that any activities outside this area would not have any additive effects to those activities proposed in this document. This area is approximately 411,331 acres. Figures in the following table of past, present, and reasonably foreseeable future actions within that general area relevant to cumulative effects discussions for this EA are calculated from BLM GIS data. Figures are approximate.

Table CUM1. Past, Present, and Foreseeable Actions.

Type of Activity	**Past and Present**	**Reasonably foreseeable additions**
Grazing Allotments	30 active BLM allotments (Idaho); one recently closed, another with a small portion bought-out and closed.	Permits are renewed/modified as they expire: 16 to be processed by 2013.
Grazing Animal Unit Months	27,020 active AUMs	Adjustments in AUMs may be made as permits are processed.
Fences	563 miles (Idaho side only) (public, private and state land)	2 miles (Trout Springs Allotment)
Wildfire	58,700 acres (Idaho only,	Unknown

	between 1986-2011)	
Juniper Treatments (mechanical and prescribed fire)	<41,000 acres (estimated, Idaho and Oregon)	23,300 acres gross, <11,650 net (Trout Springs); <5,000 (Oregon, estimated)
Noxious Weed Treatments	87 infestations covering <82 acres treated since 1996 (Idaho).	<10 acres/year anticipated
Agriculture	1,261 acres	None
Roads (all are unpaved)	507 miles (Idaho) plus 105 miles (Oregon)	None

Current Conditions

Livestock grazing is the dominant land use activity in the area, and virtually all of the land area is managed for grazing. In the 1990s, BLM initiated a series of range reform activities in response to poor range conditions. Since the Standards were implemented in 1997, Idaho BLM has reviewed and issued grazing permits on about half of the available allotments in the general area. The final decisions for these allotments have been implemented to make significant progress toward meeting Standards. Allotments in this area are primarily grazed throughout the spring and summer. Additionally, a variety of range improvement projects such as spring developments, fences, cattle guards, and troughs have been implemented across the landscape to aid in livestock grazing management. Allotments that border the Pole Creek Allotment within Idaho are Trout Springs, Pleasant Valley, Squaw Creek FFR, and Bull Basin. Individual resources may have additional allotments in their cumulative effects analysis area; however, this analysis assumes grazing will occur on most areas, and therefore, grazing cumulative effects are not discussed on an allotment-by-allotment basis. Because increased NEPA analysis has occurred the last several years to address issues such as sage-grouse, this analysis assumes that allotments with final decisions that are implemented are making significant progress toward the Standards. Oregon State Lands (also grazed by livestock) make up the majority of the west boundary of the Pole Creek Allotment. Another cumulative effect is the North Fork Owyhee River buyout which would eliminate livestock grazing on a small portion (611.5 acres) of public land in the M Stanford FFR Allotment. Because of the limited acres of public land, the effects of this action would be inconsequential and will not be considered further.

Wildfire records indicate that approximately 58,700 acres (20%) have burned within the 288,000-acre Juniper Mountain area (see Section 3.1.1) since the 1980s (Heide and Corbin 2009). Much of that was the 39,500-acre Crutcher Fire in 2007, which did not reach the Pole Creek Allotment. Over the longer term, fire suppression activities have been applied to the area since at least the 1930s, contributing to changes to the vegetation (primarily an increase in juniper).

Within and adjacent to the Juniper Mountain area, various juniper cuttings and other treatments also have occurred. Besides a number of past and present designated firewood cutting areas on BLM-administered lands, some chaining (from the 1960s to early 1980s) also has taken place in the area. In addition, numerous small (≤ 100 ac) juniper cutting projects have occurred on private and State administered lands in Idaho and Oregon. Most recently, small-scale juniper

cuttings have been conducted north of North Fork Owyhee River and south of Pole Creek on lands administered by the Oregon Department of State Lands (Wiest 2010). Approximately 14,000 acres extending from Jordan Creek south to the North Fork Owyhee River (about 10 miles northwest) on lands administered by Oregon BLM has undergone cutting and very limited jackpot burning in open-stand juniper areas from 2006-2009 (LaChapelle 2010). Cumulatively, these treatments are estimated to have affected less than 10% of the landscape.

Prescribed fires began with the University of Idaho's Juniper Mountain Trials in 1979, but most activity occurred in the 1980s (USDI-BLM 1999a). BLM records indicate that in the Juniper Mountain area approximately 39,000 acres of prescribed fire units were attempted, with about 5,000 acres of treatment recorded, thus affecting less than 2% of the landscape.

Noxious weed treatments have been ongoing in the cumulative effects area, using chemical and/or mechanical methods. The acreage treated is relatively small (0.02% of the Idaho cumulative effects area), so disturbance from these treatments is negligible at the landscape scale.

Past and present agricultural conversion has occurred on private lands, affecting 0.3% of the cumulative effects area. These are generally hay fields in areas that were previously wet meadows.

Expanding population in the Treasure Valley together with an increasing popularity of off-highway vehicles (OHVs) is creating additional pressures on the resources from recreation uses. The recent Wilderness and Wild and Scenic River designation is also expected to increase recreation use of this general area. However, in the past, recreation has had virtually no effect on the cumulative effects area.

Future Actions

Reasonably foreseeable future activities in the vicinity include livestock grazing permit renewal, up to 2 miles of fence construction, and the possibility of juniper treatments (cutting and burning) for the Trout Springs Allotment, similar to that proposed in the Pole Creek Allotment. A potential of approximately 23,300 acres gross or up to about 11,650 acres net could be affected by juniper treatments. The timeframe for the Trout Springs Allotment juniper activities is similar to the Pole Creek Allotment, with NEPA and a decision planned for 2012, and implementation within the following ten years. In addition, Oregon Department of State Lands plans to continue small-scale juniper cutting projects for the next three years in the general area that recent treatments have been conducted.

A transportation plan for Owyhee County is expected in the near future which may alleviate some OHV resource concerns. However, products from travel management such as maps and signage are likely to result in increased visitor use, which may increase pressure on resources.

No energy development or other use is anticipated in the cumulative effects area.

4.1 Cumulative Effects – Upland Vegetation/Noxious Weeds

Scope
Cumulative effects are considered in the context of other activities and natural processes. The area of analysis for cumulative effects is the entire Juniper Mountain area (delineated roughly by the North Fork Owyhee River on the north, Deep Creek on the east, the Owyhee River on the south, and the Owyhee River on the west (including approximately 60,000 acres of Oregon State Land)). The timeframe considers activities since 1980 to create current conditions, activities planned within the next three years, and the expected duration of effects from those activities (generally 10 to 20 years).

Current Conditions
Vegetation in the Juniper Mountain area has been affected by historic livestock grazing because livestock selectively eat larger bunchgrasses, altering the species composition and amount of fine fuels, which changes the fire regime. Until recently, most of that grazing has been season-long, and with relatively high numbers of animals. Rest and deferred use pastures have increased in more recent management. Native ungulates (deer and elk) are common in the Juniper Mountain area. Localized disturbances from wildfires, prescribed fires, and juniper cutting and chaining have altered vegetation in recent years. Fire suppression activities have been applied to Juniper Mountain for decades. Non-native invasive plants have been introduced and spread. Synergistic interactions of these changes over time have stressed the ecosystem (Miller and Narayanan 2008). An example of these interactions is the combination of increased juniper and selective grazing both affecting large bunchgrasses.

As a result of the above combination of events, the vegetation on Juniper Mountain has been altered from what would be expected under a natural disturbance regime. The largest change is in the increase in density and area occupied by western juniper, as discussed in Section 3.1.1. Using methods and data outlined by Major (in review), the Juniper Mountain area was only approximately 7% juniper cover in historic (pre-settlement) times, but currently juniper covers about 35% of the area, a five-fold increase. Changes in species composition, with shifts toward less palatable species and the presence of non-native plants, are also evident across Juniper Mountain, although few areas dominated by non-natives exist. As a result, large bunchgrasses like bluebunch wheatgrass, which are expected to be co-dominant with sagebrush in most ecological sites, have been reduced (although not eliminated) across the landscape.

Within the cumulative effects area, about half of the allotments' permits have been processed to meet or make significant progress toward meeting Standard 4. On these allotments (at the minimum), native plant communities' health is likely to be improving over the short (<10 years) and long (>10 years) terms. The reasonably foreseeable juniper treatments are estimated to result in short-term disturbance on less than 5.7% of the cumulative effects analysis area; the long term effects are expected to be improved vegetative conditions with increased grasses and shrubs.

The reasonably foreseeable fence construction and noxious weed treatment would have small, short-term effects by removing vegetation within a limited area; within the cumulative effects area as a whole this impact would be negligible.

Cumulative Effects - Alternative A1
Cumulative effects include the continued light use of upland plant species and the potential increase of invasive weeds. Alternative A1 has livestock use levels less than recent (pre-2008) management in the Juniper Mountain area, so cumulative effects from grazing are likely to be slightly less than ongoing grazing management in other allotments in the Juniper Mountain area.

The cumulative effects of Alternative A1 with continued grazing and no juniper treatments would continue to decline in sagebrush/grass plant communities and biodiversity, as shrubs, aspen, bunchgrasses, and forbs decrease, and the Juniper Mountain area becomes more dominated by juniper and bare ground, with little variety of understory plants. This would make the ecosystem less resilient to major disturbance, such as an uncharacteristically severe wildfire, so it would be far less likely to recover to a native perennial plant community, and would be more susceptible to noxious weed invasion.

Cumulative Effects - Alternative A2
Grazing activities at levels stated in Alternative A2 would contribute toward cumulative effects by continuing to influence plant species composition and plant community biodiversity in the Juniper Mountain area, as higher (moderate) utilization levels would be expected on the Pole Creek Allotment. Cumulative effects include the continued reduction of more palatable species and the potential increase of invasive weeds. Alternative A2 has livestock use levels and season of use similar to historic management in the Juniper Mountain area, so cumulative effects from not meeting Standard 4 for grazing at higher elevations in the Pole Creek Allotment are likely to be comparable to ongoing conditions, considered with grazing management in other allotments in the Juniper Mountain area.

Cumulative effects from the continued juniper expansion without juniper treatments in Alternative A2 would be the same as described in Alternative A1.

Cumulative Effects - Alternative B
The cumulative effect of implementing grazing management in accordance with Alternative B would be similar to Alternative A1, but with a smaller change in species composition and plant community biodiversity due to the grazing rotation, season of use, and application of annual indicators. Alternative B would have improved livestock distribution and shorter grazing duration, producing improved upland conditions compared to Alternatives A1 and A2, resulting in an incrementally smaller effect to upland vegetation in the cumulative effects area. Cumulative effects from proposed range improvement projects (minor soil and vegetation disturbance) would be negligible at the cumulative effects analysis area scale because the area involved for the fence and pipeline construction are so small relative to the entire allotment and analysis area (Table CUM1). Along with the past, present, and reasonable foreseeable future actions, there should be an incremental improvement in ecological condition over a period of time.

The proposed juniper treatments in the Pole Creek Allotment would affect approximately 3% of the cumulative effects analysis area, and cumulatively with past and reasonably foreseeable juniper treatments would affect less than 17% of the cumulative effects analysis area. Juniper treatments would contribute incrementally to other disturbances in the Juniper Mountain area with subsequent effects to invasive weeds. Because the current level of juniper mortality is lower than under a natural disturbance regime, and only a portion of the juniper in the landscape would be treated, the cumulative effect is of moving closer to reference juniper seral stage proportions. Even after full project implementation, the landscape would still have an uncharacteristically high amount of dense juniper compared to younger sagebrush and grass patches. Continued juniper treatment, such as that planned in the Trout Springs Allotment, would bring the Juniper Mountain area closer toward reference proportions of juniper and sagebrush age classes across the landscape. The expected increase in herbaceous vegetation (fine fuels) as a result of prescribed fire treatment and grazing management changes would have a cumulative effect of contributing to allowing fire to play a more natural role across the landscape.

Cumulative Effects - Alternative C1 and C2

Although grazing as proposed in Alternative C1 and C2 has direct and indirect effects on upland vegetation, as described in Sec 3.1.2.4 and 3.1.2.5, short-term effects will be mitigated by rest and C1 and C2 are expected to make progress toward meeting Standard 4, so the overall trend is expected to be of improving native plant communities. Therefore, no significant negative cumulative effects are expected.

Cumulative effects from range improvement projects would be virtually the same as in Alternative B. Grazing and range improvement projects would result in a small incremental addition to cumulative effects on upland vegetation, considered with grazing and other disturbances in other allotments in the Juniper Mountain area. Along with the past, present, and reasonable foreseeable future actions, there should be an incremental improvement in ecological condition over a period of time.

Cumulative effects from juniper treatments in Alternatives C1 and C2 would be the same as described in Alternative B.

Cumulative Effects - Alternative D

Alternative D, no grazing for the term of the permit, would be quite different from typical management in the area, and contribute toward cumulative effects by moving fastest toward meeting rangeland health standards. No cumulative impacts from grazing or rangeland improvement projects (except for the two rehabilitation projects) would occur. Although the potential for livestock to spread noxious/invasive weeds would be eliminated, the weeds would persist and seeds would continue to spread due to the dispersal through wind, water, vehicle travel, and wildlife. Along with the past, present, and reasonable foreseeable future actions, there should be an incremental improvement in ecological condition over a period of time.

Cumulative effects from juniper treatments in Alternative D would be the same as described in Alternative B.

4.2 Cumulative Effects – Watershed/Soils, Water Quality, and Wetland/Riparian Areas

Scope

Cumulative effects to watersheds, soils, water quality, wetland and riparian areas are analyzed on a watershed scale. The cumulative analysis area includes the North and Middle Fork Owyhee River watersheds with a cumulative area of 212,239 acres with 177 miles of perennial and 715 miles of intermittent streams (Map 8). The Pole Creek Allotment serves as the headwaters to or adjacent to the headwaters for this larger area and greatly influences downstream conditions. Trout Springs Allotment is adjacent to the Pole Creek Allotment and is the headwaters for Middle Fork Owyhee River and Squaw Creek. Analysis timeframes include past activities that have created the present conditions, and future activities planned within the next three years, including the expected duration of effects from current and future activities (generally up to 20 years).

Current Conditions

All drainages have been affected by past and present livestock grazing through changes in channel morphology and riparian vegetation. Non-anthropogenic influences such as wildlife grazing and wildfires have undoubtedly caused localized disturbances in the watersheds. In recent years, anthropogenic disturbances such as prescribed fires, juniper woodcutting, and land clearing activities (chaining) have had limited effects on the watersheds due to their localized and small areal extent. One of the greatest influences on the watersheds has been current and past fire suppression activities that have led or at least partially led to the increase in juniper across the landscape.

As a result of anthropogenic and non-anthropogenic activities, the watersheds across the cumulative effects analysis area have been altered (mainly the increase in juniper) from what would be expected under a natural disturbance regime, as described in Section 3.1.1. In addition, the majority of the perennial streams in the area are not meeting Idaho and Oregon Department of Environmental Quality (IDEQ and ODEQ, respectively) water quality standards, primarily due to high water temperatures and/or sediment. Both water temperature and sedimentation are influenced by a variety of factors such as stream morphology and vegetation, both of which have been affected by livestock grazing. However, grazing management on BLM administered lands is periodically changing in order to meet Standards. These periodic management changes to meet Standards eventually improve overall resource conditions in the watersheds. Additionally, the recent designation of North Fork of the Owyhee River as a Wild and Scenic River along with wilderness designation should improve conditions in these areas by limiting specific land use activities.

The majority of the streams in the area are not meeting IDEQ water quality standards (Map 8), primarily due to high water temperatures. Table WQ4 identifies pollutants for Middle and North Fork Owyhee River reaches in Oregon and their 303(d) status. Oregon DEQ identifies water

temperature exceedances, flow and habitat modification, and sedimentation as common pollutants in these two watersheds. Water temperature and sedimentation are influenced by a variety of factors such as stream morphology and vegetation, both of which have been affected by livestock grazing. All drainages have been affected by past and present livestock grazing through changes in channel morphology and riparian vegetation. However, grazing management on BLM-administered lands is periodically changing in order to meet Standards. These periodic management changes to meet Standards eventually improve overall resource conditions in the watersheds. Additionally, the recent designation of North Fork of the Owyhee River as a Wild and Scenic River along with wilderness designation should improve conditions in these areas by limiting specific land use activities.

Table WQ4. Oregon DEQ 2010 integrated 303(d) report for various pollutants in the Middle and North Fork Owyhee Rivers*.

Water Body	River Miles	Pollutant	Affected Beneficial Uses	Status
Middle Fork Owyhee River	0 - 13.5	Flow and Habitat Modification	Resident fish and aquatic life; Salmonid fish spawning; Salmonid fish rearing	Water quality limited not needing a TMDL
		Sedimentation	Resident fish and aquatic life; Salmonid fish rearing; Salmonid fish spawning	Insufficient data
		Temperature	Salmonid fish rearing	Insufficient data
North Fork Owyhee River	0 - 32	Alkalinity	Aquatic life	Attaining some criteria/uses
		Ammonia	Aquatic life	Attaining some criteria/uses
		Chloride	Aquatic life	Insufficient data
		Dissolved Oxygen	Cool-water aquatic life	Attaining some criteria/uses
		pH	Water contact recreation; Resident fish and aquatic life	Attaining some criteria/uses
		Phosphate Phosphorus	Aquatic life	Attaining some criteria/uses
		Temperature	Redband or Lahontan cutthroat trout	Water quality limited, 303(d) list, TMDL needed
	0 - 9.6	Sedimentation	Salmonid fish spawning; Salmonid fish rearing	Insufficient data
		Flow and Habitat Modification	Resident fish and aquatic life; Salmonid fish rearing; Salmonid fish spawning	Water quality limited not needing a TMDL

*For more information: http://www.deq.state.or.us/wq/assessment/2010Report.htm.

Cumulative Effects – Alternative A1 and A2

The grazing scheme effects (continued hot season use for both alternatives) coupled with continual incremental effects of juniper encroachment would contribute to a cumulative increase in upland and stream channel erosion. The excess sediment, altered streambanks, and lack of deep-rooted riparian vegetation would change stream channel morphology and continue to contribute to the degradation of riparian areas and water quality (increased turbidity and water temperatures) in the allotment and in downstream receiving areas (North and Middle Fork

Owyhee rivers) in eastern Oregon. The Pole Creek Allotment is the headwaters to several streams, and influences downstream receiving areas in eastern Oregon. These downstream reaches would potentially experience similar fluvial morphological changes and associated adverse effects due to changes in watershed conditions.

Planned Trout Springs Allotment grazing changes and juniper treatments (see Scope) would incrementally improve watershed, soil, riparian, and water quality conditions in that allotment, and would contribute in improving some of these resources that are connected such as water quality in Squaw Creek and Middle Fork Owyhee River. However, there is the potential for excessive erosion and sedimentation in the short-term (1-3 years) in the reaches of Middle Fork Owyhee River and Squaw Creek within Pole Creek Allotment from the Trout Springs juniper treatments. The headwaters of both of these water bodies are in the Trout Springs Allotment. The long-term beneficial effects from the Trout Springs Allotment planned management (grazing and juniper treatment) would be limited in scope and effects, and not sufficient to counter-act the negative effects from hot season grazing and juniper encroachment proposed in these two alternatives.

Overall, streams in Pole Creek Allotment not meeting IDEQ and ODEQ water quality standards would continue to not make significant progress toward meeting Standards, while other streams would be in jeopardy of not making significant progress toward meeting Standards.

Cumulative Effects - Alternatives B, C1, and C2

The varying grazing schemes along with the proposed juniper treatments would improve (to a greater or lesser degree per alternative) upland and riparian vegetation, thereby reducing erosion and accelerated soil movement in the various watersheds.

In the cumulative effects area, Pole Creek Allotment grazing management, along with planned Trout Springs Allotment changes and management of other allotments and activities in the watersheds (see Scope), would cumulatively contribute in varying magnitudes toward influencing plant species composition and biodiversity. Past, present, and future proposed changes in grazing management (to progress towards meeting Standards) when added to this action is expected to improve wetlands and riparian areas by increasing woody and herbaceous communities. As plant communities change, streambanks would stabilize due to deep-rooted riparian vegetation "holding" and binding the streambank soils together. Eventually the channels would narrow and deepen and aquatic habitat conditions would improve as channel form recovers. Fine sediments would decrease and stream shading levels increase due to the development of dense and vigorous riparian plant communities. The overall stream temperatures, turbidity, and sedimentation would all expect to decrease due to the riparian and channel changes.

Despite the long-term benefits, in the short term there is potential for excessive erosion and sedimentation due to the juniper treatments because of juniper canopy cover loss and fire-induced/natural water repellency (Miller et al. 2005). These effects are expected to be limited, but additive, due to the concurrence of juniper treatments planned in both the Trout Springs and

Pole Creek Allotments. Drainages most affected are Squaw Creek and the Middle Fork Owyhee River because both are within the two allotments. Due to potential loss of streambank-binding, riparian vegetation and soil stabilizing upland vegetation, these stream channels are at-risk for widening and/or down cutting from a high intensity storm event (estimated 10-20 year storm event), and transporting large amounts of upland sediment . However, long-term juniper treatment effects combined with the improved grazing schemes would work synergistically causing plant communities to move closer to reference environmental conditions for the two watersheds. These effects (as described in the previous paragraph) would improve the capture, storage, and safe release of precipitation, and improve energy flow and nutrient cycling in the area.

Cumulative Effects – Alternative D

Cumulative effects of Alternative D, with a combination of juniper treatment and extended rest from livestock grazing, would result in greater and faster resource improvement than any other proposed alternative. Cumulative effects are similar to Alternatives B-C2 because the proposed livestock grazing and juniper treatments would move the allotment towards meeting Standards. However, since there is no livestock grazing, improvement in the various recourses would occur faster (as previously identified in the effects analyses) and similarly, the incremental effects from the various resource improvement would occur at a faster rate.

4.3 Cumulative Effects – Fish and Wildlife/Special Status Animals

Scope

The area considered for cumulative effects can vary greatly by species and their distribution across the landscape. The analysis area for fish and wildlife resources encompasses a ten mile area surrounding the allotment. Ten miles greatly exceeds the range of many species, but may encompass only some habitat types and partial annual ranges for large and/or highly mobile species (e.g., big game, raptors, and migratory birds). Analysis timeframes include past activities that have created the present conditions, and future activities planned within the next three years, including the expected duration of effects from current and future activities (generally 10 to 20 years).

Current Conditions

Wildlife, fisheries, and special status animal species and their habitats in the analysis area have been affected by livestock grazing for over a century. In much of the analysis area, upland, riparian, and stream habitats have been adversely affected by grazing practices (season of use, stocking rates), fire suppression, and juniper treatments (cutting and prescribed fires). As a result, wildlife habitat in the analysis area has been altered from what would be expected under a natural disturbance regime. Native ungulates (deer, elk, pronghorn, and bighorn sheep) are common in the analysis area and long-distance, interstate movements to seasonal ranges have been documented. The surrounding deep canyons of the Owyhee River system provide relatively undisturbed cliff nesting habitat for a variety of raptors (golden eagle and prairie falcon) and bird species. The abundant juniper woodlands provide an increasing habitat type for forest-associated species (northern goshawk and special status bats) in a shrub steppe matrix. Woodland species' populations have benefited from fire suppression activities that have

promoted juniper expansion at the expense of shrub-dependent species such as sage-grouse, Brewer's and sage sparrows, loggerhead shrike and pygmy rabbits. Riparian areas, although many not in properly functioning condition, do support limited populations of spotted frog and redband trout. Although populations of some notable species (sage-grouse) have declined rangewide, population trends in the analysis area for most wildlife, fish, and special status animals are unknown, since long-term monitoring data are lacking.

Cumulative Effects - Alternatives A1 and A2

The negative effects of the grazing scheme (continued hot season use for both alternatives) coupled with continual incremental negative effects of juniper encroachment, could contribute to the adverse cumulative effect of continued degraded wildlife habitat. Loss of forage and cover for wildlife from grazing and juniper encroachment would reduce availability of suitable habitat and productivity of wildlife throughout the area. Due to hot season grazing, habitat would continue to deteriorate in riparian areas within the allotment, preventing any contribution to improved cumulative conditions from occurring. Concentrated livestock use would continue to augment the spread of juniper across the landscape, leading to reduced habitat diversity and productivity. These effects would lead to an overall decrease in the quality of fish and wildlife habitat throughout the cumulative effects area. In addition, the number of individuals necessary to support neighboring fish and wildlife populations and maintain the genetic diversity of existing populations across the landscape could decrease. The continued expansion of juniper across the analysis area would lead to further habitat degradation for many species of wildlife, especially sage-grouse and other sagebrush-obligate species, because soils would become drier and understory forbs, shrubs, and grasses would decline, and suitable habitat and habitat diversity would be reduced.

Cumulative Effects - Alternatives B, C1 and C2

The expected improvements from proposed grazing management and juniper treatment considered cumulatively with other activities (see Section 3.0) should overall benefit fish and wildlife habitat and populations. Benefits would be the same as those discussed in the Direct and Indirect Effects section above, but would occur over a larger analysis area (approximately ten miles) as improving fish and wildlife populations within the allotment contributed to a more robust regional fish and wildlife population. The alternative grazing systems proposed have livestock use levels similar to or less than recent management in the analysis area, so cumulative effects on wildlife, fisheries and special status animals from grazing are likely to be similar to or less than current conditions. Pastures with spring and early summer use would contribute to adverse cumulative effects on birds during a sensitive nesting period, along with other allotments in the analysis area with similar seasons of use. Ground-nesting species, such as sage-grouse, would be exposed to a risk of egg and nest trampling, and would likely experience reduced nesting and foraging cover, all of which could lower productivity annually (Alternative B: Spring Use) or biennially (Alternatives C1/C2). However, a fall season of use implemented via adaptive management (Alternative B: Fall Use) would provide undisturbed breeding and rearing areas within the larger analysis area, potentially increasing wildlife productivity and populations.

Currently, livestock grazing occurs from 7/1-8/31 on the Pole Creek Allotment and in the spring (approx. 4/16-6/30) on the adjacent 60,000 acres of Oregon State Lands. If grazing management

is changed from the hot season to spring use, the permittee stated that it would result in a change of livestock grazing on the Oregon State Lands from spring to summer. The Oregon State Lands provide a significant amount of sage-grouse habitat that has been identified as providing areas of moderate and high viability for the species (ODFW 2011). However, Oregon Department of Fish and Wildlife has not identified these State Lands as a core area, possibly due to the lack of leks and low density of sage-grouse in the areas. Nonetheless, summer use on the Oregon State Lands would provide deferment of use during the critical growing season and eliminate conflicts between livestock and sage-grouse during the nesting/early brood-rearing season.

An adequate cumulative effects analysis of sage-grouse habitat must incorporate the multiple spatial scales of sagebrush habitats that the species uses. Fine scale, site-specific effects to sage-grouse have been analyzed above (see Section 3.5.2); however, mid-scale and broad scale analyses provide information regarding effects at the subpopulation and population level, respectively. As shown in Appendix K, Greater sage-grouse within the Pole Creek Allotment belong to the Owyhee subpopulation (north-central Nevada/southeast Oregon/southwest Idaho subpopulation *sensu* Connelly et al. 2004) of the Northern Great Basin population (Garton et al. 2011).

Suitable sage-grouse habitat within the allotment is extremely limited (see Section 3.5.1) and is primarily connected to large areas of sagebrush habitat to the west in Oregon. Adjacent shrublands in Oregon are comprised of large areas of contiguous, intact sagebrush habitats. Trend information for the Owyhee subpopulation is limited as leks are surveyed infrequently primarily due to inaccessibility. Nevertheless, sage-grouse habitat within the allotment most likely represents the periphery of the range of local populations. Any adverse effects occurring in the allotment would probably have minimal consequences to the local population whose core range is within the large area of suitable habitat in Oregon.

Trends in sage-grouse populations at the broadest scale in this analysis (i.e., population level) are more readily available. A recent analysis shows that the proportion of active leks and the average number of males per active lek has decreased over the last 40 years within the Northern Great Basin population (Garton et al. 2011). The minimal effects to the sage-grouse population from grazing management actions occurring in the Pole Creek Allotment and the Owyhee subpopulation would have a negligible effect on the viability of the regional Northern Great Basin population or the species rangewide.

The proposed juniper treatments in the Pole Creek Allotment would affect approximately 3% of the cumulative effects analysis area, and cumulatively with past and reasonably foreseeable juniper treatments would affect less than 17% of the cumulative effects analysis area. The proposed Pole Creek Allotment juniper treatments, in conjunction with the treatments proposed for the Trout Springs Allotment and adjacent areas in Oregon, would have long-term (>10 years) beneficial effects to fish and wildlife habitats. Abundant juniper cover would remain throughout the allotment and cumulative effects analysis area for species that prefer forests and woodlands. Most wildlife species would benefit from the mosaic of habitats expected from the proposed treatments. Species such as sage-grouse, deer, pronghorn, and other sagebrush-obligate species would benefit from the increase in open habitat initially, and subsequent shrub steppe habitat in

the long term. Wildlife would benefit from more productive habitat types and greater habitat diversity across the landscape. These benefits could increase population numbers at the local and regional geographic scale.

The effects of the tools that could be implemented via adaptive management in conjunction with juniper treatments would result in minimal to substantial improvements to wildlife habitat at the allotment level. However, because direct and indirect effects from grazing management and juniper treatment of this project are expected to be relatively small and localized, cumulative effects from this project along with other past and ongoing activities throughout the species' range regionally are not likely to substantially affect these species' viability, nor lead to the need for listing under the ESA.

Cumulative Effects - Alternative D

The extended rest would depart markedly from the predominant grazing systems in the analysis area, creating a unique, large area undisturbed by livestock grazing, which would provide a refuge for wildlife from surrounding areas. The undisturbed mosaic of habitats could augment fish and wildlife populations in the allotment, and could provide a productive source area for surrounding allotments. Improvements to headwaters would benefit aquatic habitats and species in the allotment and downstream. Juniper treatments would have short-term disturbance (<5 years), but long-term (>10 years) benefits would be as described above.

4.4 Cumulative Effects – Botany/Special Status Plants

Scope

The area of analysis for cumulative effects is the range of thinleaf goldenhead and harlequin calicoflower within Idaho and Oregon. The timeframe considers activities since 1980 to create current conditions, reasonably foreseeable projects planned in the next three years, and the expected duration of current and planned activities (generally 10 to 20 years). Cumulative effects of this project are considered in the context of other management activities and habitat changes across this area.

Current Conditions

Thinleaf goldenhead is listed by the Oregon Biodiversity Information Center on List 4 (taxa of concern, not currently threatened or endangered) (OBIC 2010). Within Idaho, only 14 occurrences were recorded in the Idaho Conservation Data Center before 2010 surveys, all in western Owyhee County (ICDC 2010). Harlequin calicoflower is not tracked in Oregon (OBIC 2010), but is recorded from only three counties (Lake, Harney, and Malheur) (USDA NRCS 2011), although it is apparently common, at least in eastern Malheur County (Mansfield 2010). Only three occurrences, all in western Owyhee County, are recorded for Idaho (ICDC 2010). Thus, both species are at the eastern edge of their ranges, and although rare in Idaho, are more abundant in Oregon.

Effects to occurrences of these species across their range within the area of analysis include grazing, trampling, wildfire, and localized hydrologic alterations. Grazing and trampling are likely having continuing effects, although the magnitude of effects is unclear. Wildfire and

hydrologic manipulation (such as reservoir development) probably have altered moisture conditions in habitat for these species; effects are likely short-term and localized. Population trends for these species are unknown because long-term monitoring data are lacking, but effects from these activities likely have affected individual plants and localized occurrence areas; effects on long-term viability are speculative, but probably of moderate or lower concern. A rise in the number of thinleaf goldenhead occurrences has been recorded in Idaho in recent years, but this is probably a function of increased surveying rather than an enlargement in populations.

Reasonably foreseeable future activities, such as grazing permit renewals, fence construction, juniper treatments, and noxious weed treatments, are anticipated to have little or no additional effects on thinleaf goldenhead or harlequin calicoflower because avoiding special status plant locations is typically a standard design feature for construction and treatments. Also, grazing permit renewals typically consider grazing systems that minimize impacts (trampling and grazing) to special status plants, by adjusting the timing and intensity of cattle use in occupied habitat.

Cumulative Effects – Alternatives A1 and A2

Effects on thinleaf goldenhead from Alternatives A1 and A2 are expected to be low, so the additive effect of those activities considered cumulatively with previous (and reasonably foreseeable future) activities such as trampling, grazing, and hydrologic changes across the range of analysis is fairly minor. Viability of the Pole Creek occurrence of harlequin calicoflower may be important for maintaining this species in Idaho, since only three occurrences are known; a decline in Idaho population(s) may be tempered by the plant's relative abundance nearby in Oregon. Therefore, Alternative A2 may contribute to negative cumulative effects on harlequin calicoflower in Idaho. Grazing effects would continue at levels similar to past use, so cumulative effects are likely to be comparable to current conditions. Effects of juniper expansion in the absence of fire or clearing activities are unlikely to have measurable cumulative effects on these special status plants, since juniper encroachment effects are apparently low for thinleaf goldenhead or harlequin calicoflower habitat. Therefore, only slight cumulative effects from Alternative A1 are expected for special status plants, and low cumulative effects from Alternative A2.

Cumulative Effects - Alternative B

Cumulative effects on thinleaf goldenhead are expected to be negligible; because grazing effects are relatively low, they would not substantially trigger or contribute to a decline in populations of thinleaf goldenhead across its range in Idaho and Oregon. Grazing effects on harlequin calicoflower would also be relatively low, with no decline in the occurrence anticipated, so only minor cumulative effects are expected. Juniper treatments would also have slight cumulative effects on these species, with only minor weed and soil water increases, which would not noticeably impact populations. Therefore, the contribution of impacts from juniper treatment in Alternative B cumulatively with other effects across the range of these special status plants in Idaho and Oregon would be insignificant.

Cumulative Effects - Alternative C1 and C2

Cumulative effects from Alternative C1 would be similar to Alternative B, with relatively low effects from grazing and juniper treatment having slight cumulative effects across the species' ranges in Idaho and Oregon. Even lower direct and indirect effects would be expected from Alternative C2 because of its low actual use (535 AUMs), resulting in, at most, slight cumulative effects from a relatively low level of trampling and grazing.

Cumulative Effects - Alternative D
Negligible cumulative effects are expected from Alternative D, with no negative grazing effects and inconsequential effects from juniper treatment across the area of analysis.

4.5 Cumulative Effects – Grazing Management/Socio-economics

Scope
The analysis area, approximately 350,000 acres, includes grazing allotments on and immediately adjacent to Juniper Mountain on the east and south, approximately 60,000 acres of Oregon State Land to the west, and north to Cliffs, ID. It includes all or portions of 19 BLM grazing allotments (ten of which are Fenced Federal Range) and two Oregon State Land allotments. Ten of these BLM allotments have been fully processed (final decisions implemented); of which five are FFR allotments. The time period considered begins in 1997 when Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management were initiated and ends in 2015 when all grazing permits within the area should be implementing changes required by the Standards and Guidelines.

Current Condition
Livestock grazing in the region dates back to the late 1800s and remains the dominant land use of the cumulative effects area. Throughout its history, ranching remains a dispersed activity characterized by rural communities and provides important income to the area. The grazed acreage on Oregon State Lands and private holdings is not subject to administration by the Federal government, but past, present, and foreseeable actions on those lands will be included in the cumulative effects analysis of this section.

Prior to the Taylor Grazing Act, unregulated livestock grazing severely affected the vegetation resources within the cumulative effects area by eliminating or greatly reducing the primary understory plants. Recent management systems in some areas have reduced past vegetation effects somewhat, and sustained livestock grazing and ranching communities in the cumulative effects area.

To support the management of these allotments, a variety of range improvement projects have been implemented through the years. Numerous springs and troughs have been developed, and many cattle guards and miles of permanent fencing have been constructed (both public and private) to support grazing management in the cumulative effects area.

Cumulative Effects - Alternatives A1 and A2
Alternatives A1 and A2 and lack of juniper treatment represent a small percentage (6.7%) of this analysis area. Although Standards are not expected to be met under these alternatives, past and

present actions, in combination with future planned activities (as identified on Table CUM1) would have minor effects on livestock/grazing management and income within the cumulative effects area. Surrounding areas would be expected to improve in conditions which would improve the overall ability to manage livestock and produce and income, but not on this allotment under these alternatives. No additional improvement in ecological conditions would occur and no additional benefit to the sustainability of the livestock/ranching industry and livestock management/socio-economics would ensue if these alternatives are implemented.

Cumulative Effects - Alternatives B-D
The proposed grazing management (or No Grazing in Alternative D) and juniper treatments (or lack of juniper treatment in Alternatives A1 and A2) represent a small percentage (6.7%) of this analysis area. Past and present actions, in combination with future planned activities from livestock grazing, recreation, road construction/maintenance, mining activities, and vegetation projects (as identified on Table CUM1) would have negligible effects on livestock/grazing management and income within the cumulative effects area. Effects from grazing are likely to change and continue to improve throughout the area from present conditions. Implementation of vegetation projects would have short-term effects to livestock management, but would be a benefit in the long term which would improve the overall ability to manage livestock and produce an income. Cumulatively, approximately 2.6 net miles of additional fence (3.6 miles of new fence minus 1 mile of fence removal, except in Alternative D) in combination with current (563 miles of fence exist) and foreseeable fence construction (two miles) would have negligible effects because numerous miles of fence already occur in the analysis area. This is a negligible increase to the fence network in the cumulative effects area, and there is no indication that the current fence density is having negative effects to grazing management and socio-economic resources. Along with the past, present, and reasonable foreseeable future actions, there should be an incremental improvement in ecological condition over a period of time, therefore benefitting the sustainability of the livestock/ranching industry and livestock management/socio-economics.

4.6 Cumulative Effects – Cultural and Paleontological Resources

Scope
The area of analysis for cumulative effects is the entire Juniper Mountain area (delineated roughly by the North Fork Owyhee River on the north, Deep Creek on the east, the Owyhee River on the south, and the Owyhee River on the west (including approximately 60,000 acres of Oregon State Land)). The timeframe considered covers activities since 1980 to create current conditions, activities planned within the next three years, and the expected duration of effects from those activities (generally 10 to 20 years).

Current Condition
Cultural sites, in general, are subject to adverse effects primarily through surface and subsurface ground disturbances and direct or indirect damage to non-surficial features such as rock art or structures. These effects can be natural or human-caused.

Newly recorded sites and a sample monitoring of previously recorded sites within the allotment reveal little to no effect from livestock. Over 33,250 acres of Juniper Mountain have been inventoried for cultural resources resulting in a total of 44 site recordings and producing an approximate site density of one per every 756 acres. Most of these sites are Native American and are generally small in size (usually less than one-half acre). Very few Euroamerican sites are present, most date to the mid-twentieth century.

Cumulative Effects - Alternatives A1-D
The impacts under these six proposals could include livestock trampling, loss of site integrity, depositional compaction, fire, smoke, mechanical traverse, induced erosion and unlawful excavation. Nonetheless, effects to cultural resources are expected to be negligible under all alternatives, therefore, no cumulative effects would occur.

4.7 Cumulative Effects – Recreation and Visual Resources

Scope
Cumulative effects to recreation and visual resources within the Pole Creek and adjacent allotments would primarily be the result of grazing, future vegetation treatment projects (such as broadcast burning in surrounding areas), and current and future actions that stem from the Omnibus Public Lands Management Act (OMA) that was passed by congress on March 30, 2009 (P.L. 111-11) (See Table CUM1 for a list of activities). The passing of the Act designated roughly 517,000 acres of wilderness and 316 miles of wild and scenic rivers within Owyhee County. In addition, the Act also mandates the BLM to complete a transportation plan for all of Owyhee County. The area of analysis for cumulative effects is the entire Juniper Mountain area (delineated roughly by the North Fork Owyhee River on the north, Deep Creek on the east, the Owyhee River on the south, and the Oregon border on the west). The timeframe considered is activities since OMA for current conditions and activities planned within the next three years, and the expected duration of effects from those activities (generally 10 to 20 years).

Current Condition
Presently the main recreational activities within the Pole Creek Allotment and the analysis area include: backpacking, horseback riding, camping (North Fork Campground and dispersed camping), OHV use, hunting, fishing, and sightseeing. Recreationists utilizing the area can also travel the Backcountry Byway. Also within the area lie the recently designated "wild" North and South Fork Owyhee Rivers and the North Fork Owyhee wilderness as well as the Owyhee River wilderness. The North and South Fork Owyhee Rivers and their tributaries offer outstanding low-water backpacking and high water boating opportunities. Off-highway motor vehicle designations in the Pole Creek Allotment and surrounding area, with the exception of the wilderness area, are limited to existing roads and trails.

Cumulative Effects – Alternatives A1-D
Recreation
Because few effects are expected from any alternatives, cumulative effects would be minimal for recreation. Opportunities for recreational activities in the cumulative analysis area are abundant and would not be altered by the alternatives. Access would be limited during the burn

treatments which, depending on the timing, would affect the ability to access areas for hunters and other recreationists. Temporary closures, cumulatively with road closures as a result of wilderness designations, would reduce accessibility in the area for hunters and other recreationists who rely heavily on roads and trails for motorized access. The expected vegetative improvement from the alternatives, along with development of a travel management plan, would result in an improved recreation experience.

Visual Resources
In the short-term some visual impacts would occur during construction of range improvement projects as new areas of disturbance are created. However, because of the excellent vegetative screening and rugged topography throughout much of the allotment and minimal impact construction techniques, these types of features are substantially unnoticeable except at very close distances.

Juniper treatment projects would have extensive effects on visual resources. An estimated 50-70% reduction in seral junipers would have a beneficial long-term effect on visual quality as scenic vistas open up and aspen, perennial grasses, and other vegetation increase as a result of juniper removal. Additionally, retaining 30-50% of the existing juniper as well as old growth juniper and mahogany stands would remain and assist in maintaining the scenic quality throughout the area. The girdling of trees would provide the landscape with a more natural appearance as trees slowly expire, which helps maintain the visual characteristics of the area. Girdling, as opposed to the dropping of trees on site, gives casual observers/sightseers traveling through the area the appearance that the area was once burned by wildfire.

In the long term, the combined effects of the improved grazing management, designation of wilderness areas, wild and scenic rivers, travel management planning, and juniper treatments within the cumulative analysis area would be beneficial to the overall health and scenic quality of the area.

4.8 Cumulative Effects – Lands with Wilderness Characteristics

Scope
Cumulative effects to LWCs are considered in the context of other activities and natural processes. Effects within the Pole Creek and adjacent allotments would primarily be the result of recreation, grazing, future vegetation treatment projects, such as broadcast burning in surrounding areas, and current and future actions that stem from OMA that was passed by Congress in 2009 (See Table CUM1 for a list of activities). The Act mandates the BLM to complete a transportation plan for all of Owyhee County, which would designate routes as open, closed, or limited. The area of analysis for cumulative effects is the entire Juniper Mountain area (delineated roughly by the North Fork Owyhee River on the north, Deep Creek on the east, the Owyhee River on the south, and the Oregon border on the west). The timeframe considered recent activities for current conditions and activities planned within the next three years, and the expected duration of effects from those activities (generally 10 to 20 years).

Current Condition

The Pole Creek Allotment and much of the surrounding area have been identified as LWCs. An update of the 1970 inventory, which is required by FLPMA, is currently ongoing for the Owyhee Field Office. With the exception of private inholdings, a large amount of the area remains natural with limited improvements, roads, routes, and man-made features. Much of the area contains rugged terrain, deep canyons, and good vegetative screening, and offers outstanding opportunities for solitude. Outstanding opportunities for primitive and unconfined recreation exist throughout most of the area. These opportunities include camping, backpacking, hiking, photography, sightseeing, fishing, hunting, wildlife viewing, and horseback riding. The quality of recreational opportunities is generally considered outstanding because of the exceptional or unusual natural features and recreational attractions throughout the area.

Cumulative Effects – Alternatives A1-D

Because few effects are expected from any alternatives, cumulative effects would be minimal for LWCs. The short-term impacts from livestock grazing (or no livestock grazing) and juniper treatments (or no juniper treatments) on the Pole Creek Allotment in combination with anticipated impacts from livestock grazing (or no livestock grazing) and juniper treatments (or no juniper treatments) on the Trout Springs Allotment and other proposed activities are not expected to be significant. In the long term, the combined effects of the improved grazing management, travel management planning, and juniper treatments within the cumulative analysis area would be beneficial to LWCs and the overall ecological health, naturalness, and scenic quality of the area. There would be no long-term impairment of LWCs.

4.9 Cumulative Effects – Air Quality

Scope

The scope of this analysis would include Owyhee County and Malheur County. The short term timeframe would occur for a month before and after the prescribed burns to allow for any drift of smoke from this burn and any neighboring burn. Planned burn areas include the Trout Springs, Pole Creek, Flint Creek, Silver City, Vale District BLM, and Oregon State Land. Because negligible effects to air quality occur from livestock, the scope was determined based on prescribed burns.

Current Condition

Air quality is generally good, except during short term prescribe fire or wildfire events. Dairy/feedlot operations contribute to localized air quality effects.

Cumulative Effects – Alternatives A1 and A2

Because negligible effects from livestock and no effect from prescribed burning would occur, no cumulative effects are expected.

Cumulative Effects – Alternatives B, C1, C2, and D

Short term effects, including increased particulate matter and reduced visibility, may occur in combination with other planned burn treatments and wildfires. However, long-term effects to air quality are expected to be negligible under all alternatives; therefore, no cumulative effects would occur.

5.0 Consultation and Coordination

5.1 List of Preparers

Name	Title	Function
Chris Robbins	Rangeland Management Specialist	Team Lead, Upland Vegetation, Weeds, Grazing Management/Socio-Economic
Steven Jirik	Assistant Field Manager	Fire Ecology
Richard Jackson	Hydrologist/Soil Scientist	Riparian, Water Quality, Watersheds, Soils
Beth Corbin	Ecologist/Botanist	Upland Vegetation, Fire Ecology, Weeds, Special Status Plant Species
Jason Sutter	Wildlife Biologist	Fish and Wildlife, Special Status Animal Species
Brad Jost	Wildlife Biologist	Fish and Wildlife, Special Status Animal Species
Ryan Homan	Outdoor Recreation Planner	Recreation, Visual Resource Management, Air Quality, Lands with Wilderness Characteristics
Brian McCabe	Archaeologist	Cultural Resources, Paleontology

5.2 List of Agencies, Organizations, and Individuals Consulted

Received written comments from:

- Idaho Department of Fish and Game
- Western Watersheds Project

Record of OFO Interdisciplinary (ID) Team Meetings with permittees and other publics. This does not include meetings with ID team members only.

Meeting Date	Location	Attendance	Discussion Topics
3/11/2009	Owyhee Field Office	Roy Hall, Buddy Green, Steve Jirik, Chris Robbins, Rich Jackson, Mike McGee,	BLM presented results of the 2001 S&G Determination, Upland & Riparian monitoring summary.
4/1/2009	Owyhee Field Office		Discussed management objectives and RMP objectives including: Livestock grazing, stream/riparian, Upland & riparian wildlife, and juniper management objectives. Also discussed U of I & OSU juniper related research findings for this area. Emphasized that all grazing alternatives must meet these objectives.
4/22/2009	Owyhee Field Office		Discussed & clarified current grazing management. Discussed possible alternatives. Requested permittees to submit their preferred alternative.
11/10/2009	Pole Creek Allotment tour	Katie Fite & other members of WWP, Tom Moore, Danny	Discussed alternatives and juniper treatments.

		Moore, BLM	
11/10/2010	Moore's Ranch	Tom Moore, Danny Moore, Chris Robbins	Discussed alternatives and juniper treatments.
12/15/2010	Moore's Ranch	Tom Moore, Danny Moore, Chris Robbins	Discussed alternatives and juniper treatments.

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7.0 Appendices

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